

# NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

## FORE score

Looking to boost its Gigabit Ethernet and directory wares, FORE last week snapped up Berkeley Networks for \$250 million. Page 8.

## INTRA net

A NETWORK WORLD MONTHLY PULLOUT SUPPLEMENT



# Leave it to the hound

### ALSO INSIDE

HTML 4.0 unwrapped

A guide to Web server log analyzers

Five tips for keeping an intranet tidy

PICK A NEXT-GENERATION SEARCH TOOL TO DO THE HUNTING FOR YOU.

PATRICIA BARRY LEVY

# AT&T hitting the resale trail

by David Rohde

Basking Ridge, N.J.

Move over, all you Cisco resellers, IBM integrators and Novell VARs. Say hello to a new concept in data-networking sales and service: the AT&T value-added reseller.

Marking a sea change in its sales philosophy, AT&T has since early this year been quietly recruiting a nationwide army of local network integrators. The resellers have been raining on AT&T's data services so they can sell them along with routers, switches and hubs.

The move means users will be able to get core AT&T services from local VARs and network integrators that also offer integrated LAN/WAN management services. AT&T has never used VARs or resellers except to provide service to a handful of very large accounts.

Once the quintessential direct sales house, AT&T has given its managers marching orders to find new channels

## LET'S GET THIS TRAIN MOVING

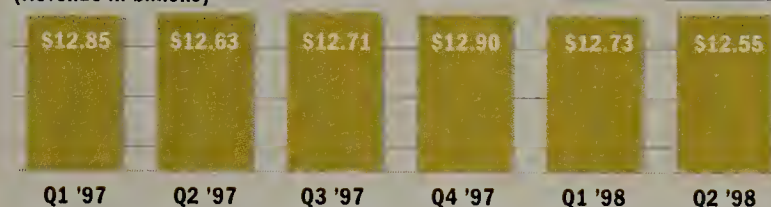
To renew AT&T's overall growth, CEO C. Michael Armstrong has mandated that company officials:



- Quadruple the size of the AT&T Solutions outsourcing and managed net unit by 2002.
- Revitalize international business via AT&T's new alliance with British Telecommunications.
- Rapidly ramp up growth of IP business services over the AT&T WorldNet network.

AT&T's revenue growth has been practically nonexistent recently, largely because consumers are paying less for long distance.

(Revenue in billions)



SOURCE: AT&T, BASKING RIDGE, N.J.

for the company's four principal data services: frame relay, private lines, the WorldNet Managed Internet Service (MIS) dedicated Internet access offering, and the new

WorldNet Virtual Private Network Service (VPNS).

Currently the AT&T initiative consists of two separate programs. Under the AT&T

See AT&T, page 54

# Network mgmt. no cakewalk

by Robin Schreier Hohman

Network management platforms should make life easier by helping companies identify problems before they get out of hand. But try telling that to customers who struggle with these products day in and day out.

Packages such as Hewlett-Packard's OpenView, Cabletron's Spectrum, Computer Associates' Unicenter TNG and Tivoli's TME are supposed to track everything from device throughput to application performance. But users say the sheer complexity of



Media News CIO Kevin Hamilton says rolling out complex management systems means weekends in the office.

these packages has led to frustration, severe underutilization and, in some cases, total abandonment.

A recent Gartner Group study found that 18 months after deployment, 70% of enterprise management software implementations were deemed failures. At three years after deployment, the failure rate rose to 75%. The study considered implementation a failure if the company did not achieve expectations or return on investment.

See Management, page 55

DUANE HUNTRESS



JUST BECAUSE WE DIDN'T INVENT THE DATA CENTER SERVER

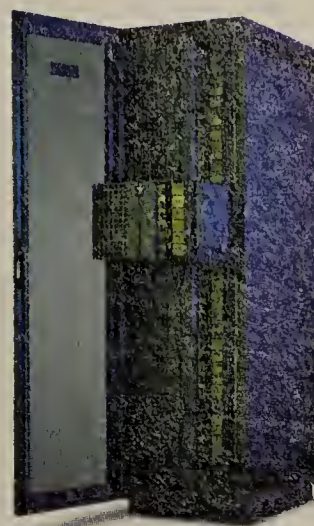
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## BAY UNPLUGGED

The network equipment maker dives into the wireless LAN market. Page 15.

## CERTIFICATION SITUATION

Columnist Linda Musthaler ruminates over the state of vendor certification programs. Page 31.



## GOIN' VPN CRAZY

Despite some trials and tribulations, users such as AFC Enterprise's Bill Clapes are rolling out VPNs. Page 19.



ROBIN NELSON

# NetworkWorldContents

August 31, 1998 Volume 15, Number 35

### News

- 6 QoS cooperation** reaches new heights at IETF meeting.
- 8 Shiva** simplifies remote access management.
- 8 FORE** snaps up Berkeley for \$250 million; Start-up's products will augment FORE's Ethernet, intelligent network offerings.
- 10 Oracle** to offer software leasing service.
- 10 Oracle** unwraps apps server.
- 14 Williams** unveils new twist on frame relay.

### Local Networks

- 15 New breed** of vendors embraces thin clients.
- 15 Bay** airs wireless LAN gear; Technology comes from Netwave acquisition.
- 16 Novell** pops Year 2000 tool into ZENworks.
- 16 Microsoft** buys clustering vendor.
- 16 Dave Kearns:** Deflating the NT 5.0 Beta 2 balloon.

### Internetworks

- 17 Bossier City** police have wireless IP network locked up.
- 17 Cisco** boosts low-end router family.

### Carriers & ISPs

- 19 Users detail** VPN success stories.
- 19 America Online** grows 'Net backbone, adds ISP links.

**SPECIAL  
FOCUS**

#### Frame relay/ATM mix

Frame relay/ATM interworking boosts speeds, reduces risks. Page 22.

- 20 Daniel Briere and Christine Heckart:** Hey, at least DSL is here . . . somewhere.

### Intranet Applications

- 23 Electronic** commerce firms prove to be money magnets.
- 23 Lotus** and Microsoft tussle over enterprise messaging supremacy.
- 24 Scott Bradner:** Examining architectural differences.

### Technology Update

- 29 ATM flow control:** Recipe for demanding applications.

### Management Strategies

- 41 Campus convenience:** Distance learning reduces scheduling conflicts and

eliminates commuting woes for IT professionals.

### Opinions

- 30 Editorial:** Ship-date shenanigans.
- 30 Ira Brodsky:** Needed: A philosophy for the cyberspace age.
- 31 Linda Musthaler:** The importance of being experienced.
- 56 Mark Gibbs:** Shakedown spam and antispam spam.
- 56 'Net Buzz:** Spam assaults matrimonial bonds; Rubric grabs venture funding.

Net Know-It-All. Page 10.

Network Help Desk. Page 29.

Message Queue. Page 30.

Editorial and advertiser indexes. Page 53.

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### This Week

#### Only on Fusion

**DSL vs. cable.** The latest Fusion Face-off pits cable company MediaOne against DSL vendor Paradyne. Step up to the virtual mike with your own questions and comments for their executives. **DocFinder: 8637**

**Water Cooler.** Would somebody please get management vendors to talk about policy-based networks in something approximating English? Associate News Editor Michael Cooney is getting fed up with the verbiage. **DocFinder: 8642**

**Buyer's Guides.** We're putting our editorial calendar together for the coming year. What products and technologies would you like us to cover in in-depth reviews, Buyer's Guides and feature articles? Fill out our questionnaire and you could win free tickets to *Network World's* party at NetWorld+Interop this fall in Atlanta. **DocFinder: 8643**

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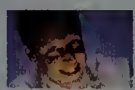
## FEATURES

# Begging for bandwidth

Consult the 1998 Network World/Deloitte Consulting Budget Survey for the IT budget bottom line. Page 35.



**REVIEW:** PowerQuest's ServerMagic disk-partitioning tool makes the improbable possible. Page 39.



**COOL TOOLS:** 3Com's PalmPilot is a handheld handyman. Page 40.



**FACE-OFF:** MediaOne and Paradyne executives debate whether cable or DSL is better for telecommuters. Page 33.

PHOTO (BOTTOM LEFT) CHRISTOPHER WRIGHT



## News briefs, August 31, 1998

**Now that's some tough software**

■ SAP AG executives say there is no basis to a \$500 million lawsuit filed by the trustees of bankrupt pharmaceutical products distributor FoxMeyer Corp. The lawsuit alleges the installation of SAP's software helped lead to FoxMeyer's demise and maintains that in 1993, FoxMeyer agreed to deploy SAP's R/3 enterprise resource planning software at its warehouses. But in 1994, SAP told FoxMeyer the software could process invoices at only six of FoxMeyer's 23 sites. In addition, R/3 could process only 10,000 customer orders per night, compared with 420,000 under FoxMeyer's original system, published reports say. FoxMeyer last week filed the suit against SAP America, the U.S. subsidiary of Germany's SAP AG, in a Wilmington, Del., bankruptcy court.

**E-stamp collecting**

■ Philatelists take note. The fledgling Internet stamp marketplace has another player. Stampmaster, Inc. of Westlake, Calif., has received blessings from the U.S. Postal Service to begin beta tests of its 'Net-based postage delivery system. Although E-Stamp, Inc. of Palo Alto, Calif., in March was first to gain such approval, Stampmaster believes its system is better because, unlike with E-Stamp, no special hardware is needed. E-Stamp, however, does have the backing of such heavyweights as Microsoft and Compaq. Pitney-Bowes is also poised to enter this market. In other words, don't dawdle if you want a Stampmaster in your collection.

**Hot to trot**

■ Microsoft's HotMail subsidiary is scrambling to fix a security glitch in its free e-mail service that could allow unsavory hackers to steal passwords from HotMail users. The security breach was uncovered last week by a Web developer at Canadian firm Specialty Installations, which has posted an explanation of the breach on the company's "Because-We-Can" Web page ([www.because-wecan.com/hotmail/default.htm](http://www.because-wecan.com/hotmail/default.htm)). The glitch involves sending an e-mail message to a HotMail user that contains a particular JavaScript program. When the user opens the e-mail, the JavaScript program starts running almost instantly and creates a message box that tells the user his account access has timed out and asks him to re-enter his logon information. In doing so, the victim's username and password are returned to the person who sent the malicious e-mail. Armed with that information, the intruder could delete, send and read the victim's e-mail, access the victim's address book and cause other trouble, according to Specialty Installations. HotMail is working on a fix. As a temporary measure, HotMail users can disable the JavaScript support in their browser software.

**Thin-client mania**

■ If thin is in, then Thinergy '98, a new trade show devoted to the Windows thin-client market, should be hot. Citrix, which sponsors the event, is expected to announce new application management tools that would, for example, let administrators deploy Microsoft Office to users but prevent users from changing configuration settings. In addition, Citrix customers expect the company to announce new features such as load balancing for its WinFrame software.

In other show activity, Boundless Technologies will showcase its new Windows CE product line, dubbed the Windows Terminal Software Suite. The vendor will also show for the first time a computer hosting the Linux operating system, which will be able to simultaneously run a Web browser, an X Server to access Unix applications, and a set of host terminal emulation programs.

# QoS cooperation reaches new heights at IETF meeting

By Sandra Gittlen  
Chicago

There's been plenty of infighting over the years among quality-of-service (QoS) standards developers, but QoS advocates attending last week's Internet Engineering Task Force (IETF) meeting were practically the picture of cooperation.

Working groups — including those for Differentiated Services (Diff-Serv), Multi-protocol Label Switching (MPLS), Resource Reservation Protocol (RSVP) and the RSVP Admission Policy — pushed a handful of initiatives toward the standards stage. But rather than approaching each QoS separately, IETF members looked for ways to make the technologies work together.

For example, the RSVP working group members listened to a member of the MPLS working group explain how MPLS could use RSVP as its signaling protocol.

Separately, a new policy framework working group was formed to guide the development of policy management schemes, which need to take different QoS technologies into account.

Many of the 42nd IETF meeting's 2,000 attendees say it's becoming increasingly important to sort out differences among various QoS schemes in order to help ISPs meet customer demand for more reliable Internet traffic delivery.

"This cooperation is a response by the IETF to customers," says John Strassner, co-chair of the policy framework working group. "ISPs need to offer differentiated services because customers want to use high-powered applications with more functionality," adds Strassner, who is also the chief architect of Cisco's Internet Business Unit.

Equipment and software vendors, in turn, are receiving pressure from ISPs to standardize their wares so that ISPs can offer guarantees on traffic performance and delivery across each others' networks, Strassner says.

Understanding how different QoS approaches can co-exist

across corporate, carrier and ISP networks is important in moving ahead with QoS standards efforts, says Kathleen Nichols, senior principal engineer at Bay Networks in Santa Clara, Calif.

RSVP handles bandwidth reservations. Common Open Policy Service, a draft in progress by the RSVP Admission Policy working group,

meeting with Cisco and Bay about Diff-Serv, Microsoft changed its perspective.

"Diff-Serv's great," says Yoram Bernet, development lead of advanced technology at Microsoft. "It provides a way to extend QoS to places people feared RSVP won't be able to scale."

Microsoft included an implementation of Diff-Serv in NT 5.0 Beta 2.

**IETF lingo 101****Terminology used at last week's IETF meeting included:**

What was said:	What was meant:
"I must have dropped that packet."	The person didn't read or respond properly to an e-mail request.
"Before I answer that question, have you read the draft?"	Because the answer to the question is almost certainly "no," working group chairs use this as a way to get someone unknowledgeable off the microphone.
"I must have lost those bits."	The person never received a message.
"We're looking at a metaflaw here."	The group has gotten off the track by concentrating on a minute detail.
"I would recommend posting that to the list."	Most of the work that the IETF does is handled through mailing lists. The actual meetings are used to firm up specific issues. This phrase is used when a meeting participant is going off on a tangent.

can be used to check with a policy server to ensure a user has the right to request that bandwidth.

Diff-Serv uses bits within a packet header to denote the level of service a packet is to receive, while MPLS specifies the best route for traffic through a network based on a label marking source, destination and other factors. Diff-Serv backers say RSVP can be used at the edge of a network, while Diff-Serv is implemented at the core.

Until now, the various working groups dealing with QoS have largely kept to themselves, resulting in some standards delays, Nichols says.

For example, Microsoft until recently had opposed the Diff-Serv draft out of concern that Diff-Serv development would impede RSVP — a technology Microsoft supports in products such as Windows NT and 98. But after recently

Some attendees thought RSVP would be passed over at this IETF meeting because of its inability to scale well. "It's just not the best approach in a heterogeneous world," says Lixia Zhang, co-author of the RSVP specification. But she adds that a combination of RSVP and Diff-Serv has potential.

"RSVP's gained a new life," Nichols says.

While the MPLS and RSVP Admission Policy working groups are looking to the IETF's December meeting in Orlando, Fla., to get their standards approved, the Diff-Serv working group was able to push through its basic architecture standard.

Next on the Diff-Serv group's plate is standardizing what the bits in the Diff-Serv header will mean.

The newly formed policy framework working group hopes to have its standard implemented next summer. ■



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Winners will be profiled in our year-end Power Issue and will be honored in an awards ceremony at the ComNet conference in Washington, D.C. next year.

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For entry details, go to [www.nwfusion.com/media/lounge](http://www.nwfusion.com/media/lounge).

The entry deadline is Sept. 1, 1998.

Good luck. And hurry.

# FORE buys Berkeley for \$250 million

By Jim Duffy

Warrendale, Pa.

FORE Systems' \$250 million acquisition of Gigabit Ethernet start-up Berkeley Networks will let FORE offer users a broader menu of intelligent ATM and Ethernet products.

The purchase, announced last week, gives FORE high-end Layer 3 and Layer 4 Gigabit Ethernet switches that run the Windows NT operating system. As such, the Berkeley switches let users run NT directories and applications that add intelligent services such as policies to the network.

"All along, the vision we had was to build an infrastructure that would recognize or be able to prioritize applications, and become what we are calling 'application aware,'" says Ron McKenzie, vice president of strategic marketing at FORE. "Berkeley had a very common vision, but their focus was to do that over Ethernet and multi-gigabit Ethernet," while FORE was focused on ATM.

"We came to the conclusion that it made a lot of sense to combine all the things we were doing to build an intelligent infrastructure integrating Ethernet and ATM as a transport," McKenzie says.

The Berkeley switches also enable FORE to sell to a new clientele, such as mid-size businesses and IP service providers. For ISPs, Berkeley recently rolled out software for its switches that the company

claims performs firewall packet filtering at wire speed.

Analysts say FORE's acquisition of Berkeley makes sense.

"It's a way for FORE to get

lion packet/sec and provide up to 48G bit/sec of full-duplex bandwidth. The company's products, which have been shipping since March,

wouldn't be successful getting the edge device business as part of that total sale, and a lot of it was because of either the density requirements or

### Growing via acquisitions

Last week's purchase of Berkeley Networks was just the latest in a string of FORE mergers and acquisitions.

#### May 1995

Bought RainbowBridge Communications, a maker of Internet routing software, and Applied Network Technology, an Ethernet switch vendor.

#### December 1995

Acquired CellAccess Technology, a supplier of digital access products for ATM and frame relay networks.

#### February 1996

Merged with ALANTEC, a multi-layer LAN switch vendor.

1995

1996

1997

#### December 1996

Acquired Nemesys Research, a maker of video network products.

#### December 1996

Bought Scalable Networks, a vendor of switched Fast Ethernet desktop and Gigabit Ethernet server access technology for ATM backbones.

#### January 1997

Acquired Cadia Networks, a vendor of carrier-class access technology.

into this next big push in the industry, which is basically the concept of building networks that integrate service into the infrastructure," says Esmeralda Silva, a LAN analyst at International Data Corp. in Framingham, Mass.

"It does position FORE to be able to shift to integrated services using directory-enabled networking, focusing on more security and eventually being able to do policy stuff," she says.

Berkeley's Exponent series switches process up to 70 mil-

are the e8, an enterprise backbone switch with 48 Gigabit Ethernet or 384 Fast Ethernet ports; and the e4, a modular stackable switch with 24 Gigabit Ethernet ports or 192 Fast Ethernet ports.

In addition to intelligent services, the Berkeley products give FORE a stronger story to tell at the network edge. Though FORE has been successful in selling ATM into the core of enterprise networks, the same has not always been true at the wiring closet level.

"There were times when we

the nature of integration at the edge," McKenzie says. The Berkeley switches give FORE a high-density chassis-based offering, while FORE's ES-2810 switch, which is built by Intel, will continue to be the stackable alternative, he says.

The acquisition is expected to close before the end of September. Berkeley will become a wholly owned subsidiary of FORE, and its 70 employees will be retained, FORE says.

FORE currently employs 1,650 people. ■

## Shiva simplifies remote access management

By Denise Pappalardo

Bedford, Mass.

Shiva is trying to make it easy for business users to live in both the old and new worlds of remote access networking with its latest management software release.

Shiva Access Manager (SAM) 4.0 will now let companies support their public telephone network- and Internet-based remote access devices with one management software package, says Dayton Semerjian, senior director of product marketing at Shiva.

Shiva's previous management software only supported the company's legacy LanRover Ac-

cess Switch, a device that works over regular telephone lines.

Shiva's revised management package, which lets network administrators define remote users' access parameters, will make it easier for businesses to support road warriors dialing in through a LanRover Access Switch or an Internet-based LanRover VPN Gateway.

The Tennessee Valley Authority (TVA) made a point of requesting such management support when the Knoxville, Tenn., utility installed its remote access system late last year, according to Cynthia Hill Watson, an electrical engineer at the TVA. Shiva was able to

promise Watson virtual private network (VPN) integration because of the company's acquisition of Isolation Systems. Shiva obtained its LanRover VPN Gateway, VPN software client and Certificate Authority products via that acquisition.

The TVA is using Shiva's LanRover Access Switch to support its 3,500 dial-in users. Occasional telecommuters, employees who work out of home offices and business partners dial in to the utility's network over the local telephone network, Watson says.

But for employees and business partners who reside outside the local calling area, the

TVA is creating an Internet-based VPN using Shiva's LanRover VPN Gateway, Watson says. It will be more cost-effective for the TVA to have users call in to a local ISP rather than to dial in to the TVA's network via long-distance or toll-free calls, she says.

Using SAM 4.0, Watson says she'll be able to manage all of the TVA's remote access user lists from a single interface.

The SAM 4.0 software, which runs on Windows NT, 95 and 98, will be available next month. Pricing for SAM 4.0 is \$1,500 for a 250-user version and \$4,000 for an unlimited-user edition.

Shiva is also rolling out a

new edition of its digital certificate authority server software called Shiva Certificate Authority (CA) Pro 6.5. The CA software will let business users distribute and manage their digital certificates, which are based on a public key system that lets network managers authenticate users securely.

The new CA version, packaged with a copy of Sybase's SQL Server database, allows users to support an unlimited number of digital certificates. The earlier version only supports up to 250 digital certificates. Shiva CA Pro 6.5 is available this week for \$4,800. Shiva is also offering a CA package that caps out at 500 certificates for \$2,400.

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# Oracle to offer software leasing service

By John Cox

Users looking for less expensive, faster application deployment say Oracle Chairman and CEO Larry Ellison's plan to lease software to customers is an idea that's time has come — again.

Upstaging his own product announcement — this time for Oracle Application Server 4.0 — Ellison last week told reporters and customers that the company would soon begin leasing Oracle Applications Release 11 suite, which includes financial, manufacturing and human resources applications.

The service, called Oracle Business Online, will charge companies a monthly fee to access the applications, which will be run and maintained by Oracle. All modules of Release 11 will be accessed via a Web browser, making it unnecessary to run client software on the desktop. Ellison did not elaborate on other particulars of the service.

## Could be a hit

"It's hard to pin Larry down about the details," says Ernie Martinez, president of Global Software Consultants, an Oviedo, Fla., Web development company. "At first the service sounded like a time-sharing deal — you'd buy time, for example, on Oracle Financials. But then he backpedaled and seemed to be saying, 'No, you still buy the applications, but you don't have to buy the servers or hire the people to maintain them.'"

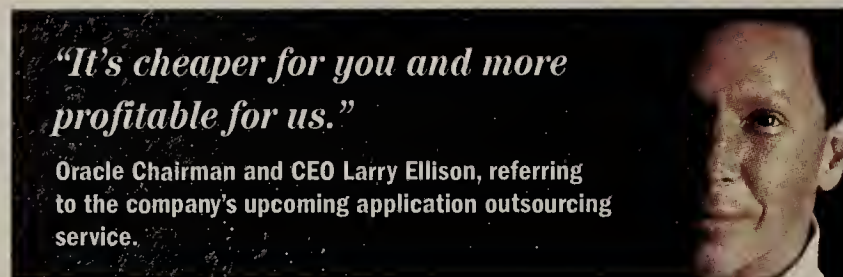
Software leasing could be a big hit, according to Martinez.

"Look at any company. They're in the business of doing what they do, and MIS shops are a necessary evil. If Oracle can make the [cost reasonable], then leasing is a wonderful idea," he says.

Leasing, also known as renting or subscribing, is similar to the time-sharing service bureaus of the 1970s. Then, customers used terminals on low-speed WANs to connect with third par-

ties who ran payroll processing applications. The popularity of the World Wide Web and the trend toward thin clients, whose manufacturers are focused on reducing costs through server-based computing, are making software leasing a possibility again.

Oracle apparently is the first major software vendor to announce a Web subscription plan. But other companies have already begun exploiting this new model.



**"It's cheaper for you and more profitable for us."**

Oracle Chairman and CEO Larry Ellison, referring to the company's upcoming application outsourcing service.

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Maritime Tel & Tel (MT&T) of Nova Scotia recently unveiled a software subscription service based on a Novell server farm.

MT&T has created an array of value-added services and connects them to homes and businesses with high-speed digital subscriber line connections running at 3M bit/sec to 7M bit/sec. Users can select from



## Oracle unwraps apps server

By John Cox and Torsten Busse

Web developers say Oracle's latest release of Oracle Application Server (OAS) will let them create Web applications with more powerful user interfaces.

The company last week took the wraps off OAS 4.0, which the database giant hopes will evolve into the central integration point for a variety of new and old software services within the enterprise.

"With Release 4.0, you can now write Java applets that are true thin clients," says Ernie Martinez, president of Global Software Consultants, an Oviedo, Fla., Web development company that uses Oracle products.

Until now, he says, developers had to embed extensive SQL code in Java applets to access and manipulate back-end databases. "This made the applet very fat," Martinez says. "But now you can put just the user interface in the applet, which connects seamlessly to OAS 4.0. The application server holds and runs the business logic that executes against the back-end database."

Due by the end of September and priced at \$195 per user, OAS 4.0 is intended to give companies a central server from which they can deploy and manage all applications used within an organization. Applications that will be

linked to the server include legacy mainframe programs and Web-based applications, company officials say.

According to Oracle, the advantage of application servers is in consolidating applications, database services and associated management functions that are now commonly run on a variety of servers and desktops. Application servers can be centrally administered and provide access to numerous users via Web browsers.

OAS, formerly named Web Application Server, now integrates two object models: the Common Object Request Broker Architecture 2.0 and Enterprise JavaBeans. OAS also offers support of the Internet Inter-ORB Protocol, enables monitoring of transactions between Web browsers and databases, and takes advantage of security features of the Oracle8 database. In addition, OAS 4.0 includes dynamic load balancing and failover features.

Looking forward, Oracle officials promise to enhance the server platform by supporting Microsoft's Common Object Model, Extensible Markup Language and public-key infrastructures.

For more information, contact Oracle at (650) 506-7000.

Busse is a correspondent with IDG News Service's San Francisco bureau.

that end users can't reach themselves.

"Once the pioneering work has been done here, I think you'll see software vendors flooding to this leasing or subscription model," Pennington says. ■

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## Notes

Continued from page 1

has yet to determine whether the beta delay will also postpone final delivery of the Notes client and Domino server upgrades.

"There's obviously the potential for impact," Davis says. "I'm sure we'll have word on that within the next couple of weeks."

Public beta programs on major Lotus releases usually last about six months. Adhering to that custom in this case would push shipment into the first quarter of 1999, more than a year later than originally planned (see graphic, right). The last releases of Notes and Domino, Versions 4.6, were released in October 1997.

The Notes 5.0 client features a brand-new browserlike look and feel, while Domino 5.0 has received an infusion of Internet capabilities and standards support.

Bruce Reed, manager of technical services at Intrinsa in Mountain View, Calif., is among the Lotus customers lamenting the delays.

"Those of us who are not lucky enough to get the preview beta are still sitting here

estly tell the users yet that 5.0 will address their concerns, and I may not be able to until it actually ships."

While the broader audience waits and stews, Lotus business partners and selected customers already have beta code in their hands and have issued positive early reports.

The private beta "is currently being evaluated by thousands of business partners and hundreds of customers," Davis notes. "Posting [beta] on the Web is the next step in that process."

Mitel is among the companies waiting for that step, according to Todd Peters, a software designer for the Ottawa PBX manufacturer. Mitel needs the additional Lightweight Directory Access Protocol support coming in Notes/Domino 5.0 in order to upgrade its own Ops Manager product, which is used to manage networks of PBXs.

"We have customers asking us when our product will support Notes," Peters says. "When we can't get an answer from Lotus, it gets a little frustrating."

Ops Manager already supports Microsoft Exchange, which means an Exchange administrator can configure

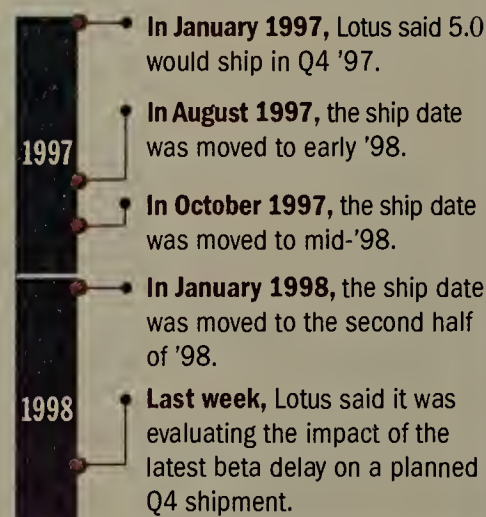
ter chance of its installation before 2000 than there is now of its deployment by the end of 2000."

Lotus declined to provide a product manager or executive to answer questions about what is causing the most recent delays. However, the company did indicate the issues center on the user interface of Notes 5.0, which has been a top selling point of the upgrade.

While the delays will undoubtedly generate negative press, one industry expert says Lotus will not necessarily pay a price in

## SLIP-SLIDIN' AWAY

Lotus keeps revising the planned ship date for Notes/Domino 5.0.



its battle vs. Exchange.

"It's not like we haven't seen this before from every major

vendor with every major product," says Tim Sloane, an analyst with the Aberdeen Group in Boston. "I don't think it's going to make all that much of a difference."

However, next year's Year 2000 compliance crunch may well magnify any damage Lotus does sustain, according to one customer.

"Lotus will really miss the boat if they don't make that [Q4] delivery date," Mitel's Peters says. "People are going to be really skeptical about upgrading their software next year with all these Year 2000 problems. They're not going to do it in mid-'99." ■

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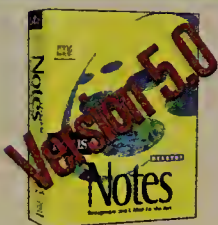
## What's coming in Notes/Domino 5.0

## In Notes:

- A dramatically redesigned browserlike user interface.
- A "headlines" view that gives users a single-glance look at important e-mail, tasks and news.
- Native support for rendering HTML.
- Support for Internet standards POP3, IMAP4 and S/MIME.

## In Domino:

- CORBA and IIOP support, which helps Domino interact with Web browsers and non-Notes clients.
- Full read and write support for LDAP3.
- Ability to use Microsoft Internet Information Server as an HTTP engine.
- Simplified user interfaces for administrators.



wondering if Lotus can deliver on all of the 5.0 promises," Reed says. "I'm looking at '99 planning, and my patience is growing thin."

Reed says the delays give companies such as his the motivation and opportunity to look more closely at Exchange and Outlook.

"A lot of end users feel lost in the complex and quirky Notes client, but the hope is that Notes 5.0 will cure a lot of that," Reed adds. "I can't hon-

an employee's e-mail and telephone accounts from the same directory.

While the Lotus delays may come as no surprise to Jim Rabb, an application architect for Canadian Pacific Railway in Calgary, Alberta, they do not come without consequences.

"The joke here goes something like, 'NT 5, IE 5, Notes 5, in 2005,'" Rabb says. "If Notes 5.0 had been released as originally planned, there would have been a much bet-

## Cisco

Continued from page 1

information, could relegate the popular SNMP to a lesser role.

The bottom line for customers is that they will be able to construct management environments — what sources say Cisco is calling "management intranets" — entirely from Internet technologies. Using CiscoWorks2000, administrators will be able to manage networks via their browsers, clicking on hyperlinks to fly from one management tool to another.

"With Cisco's announcement, this really signals that the Web is becoming the new paradigm for the management software market," says Jim Herman, vice president of Northeast Consulting Resources in Boston. "This is the year in which the Web approaches to management clearly become the mainstream."

Other vendors marketing Web management tools have little more than a Web browser interface in their applications. No company is offering the hyperlinked access to multi-vendor tools or the level of data integration that Cisco is, Herman says.

For Cisco users in particular, the management intranet should go far in integrating the myriad management tools Cisco has inherited through its \$7 billion worth of acquired companies.

CiscoWorks2000 may also signal the end of Cisco's traditional CiscoWorks router manage-

ment package as a stand-alone product. CiscoWorks2000 relies on Cisco Resource Manager (CRM), a Web tool that Cisco's been offering for about a year for router configuration and status monitoring, according to the company's third-party management software developers and other sources.

Cisco declined to comment on CiscoWorks2000, so it isn't clear what the company's plans for CiscoWorks development are or what sort of migration path the company has in mind for existing CiscoWorks customers.

Initial CiscoWorks2000 modules include a new version of CRM called Resource Manager Essentials and CiscoWorks for Switched Internetworks (CWSI) Campus.

Resource Manager Essentials provides inventory and configuration management, software deployment, device status and availability information as well as syslog analysis tools for switches and routers through a browser interface.

Resource Manager Essentials also includes a feature called Cisco Management Connection, which links other Cisco management tools and third-party or customer-developed Web management applications into the CiscoWorks-2000 environment.

This feature provides menu-level access to applications such as Computer Associates International's Unicenter TNG, Hewlett-Packard's OpenView, Sun's SunNet Manager and Tivoli Systems' TME10/NetView.

CWSI Campus provides device and network performance monitoring and configuration capabilities for Cisco Catalyst and LightStream switches.

CWSI Campus' features include RMON-based traffic monitoring, logical and physical topology discovery and display, management facilities for multiple LAN services, and user tracking.

CiscoWorks2000 represents Cisco's first product from the WBEM initiative the company helped launch with Microsoft, Intel, Compaq and BMC Software two years ago. The WBEM CIM technology was defined within the Desktop Management Task Force.

Northeast Consulting's Herman says CIM represents the Holy Grail of management application integration that platforms such as OpenView and standards bodies such as the Open Software Foundation have promised for 10 years but never delivered.

"CIM is one of those once-a-decade breakthroughs in the management business," Herman says. "We have failed in the past in every attempt to define an open, usable standard for manager-to-manager data exchange. CIM is the one that's going to make it."

Resource Manager Essentials will be available as a stand-alone product. CWSI Campus, however, requires Resource Manager Essentials and will be sold as an add-on product, sources say.

Pricing and availability of CiscoWorks2000 was not available at press time. ■



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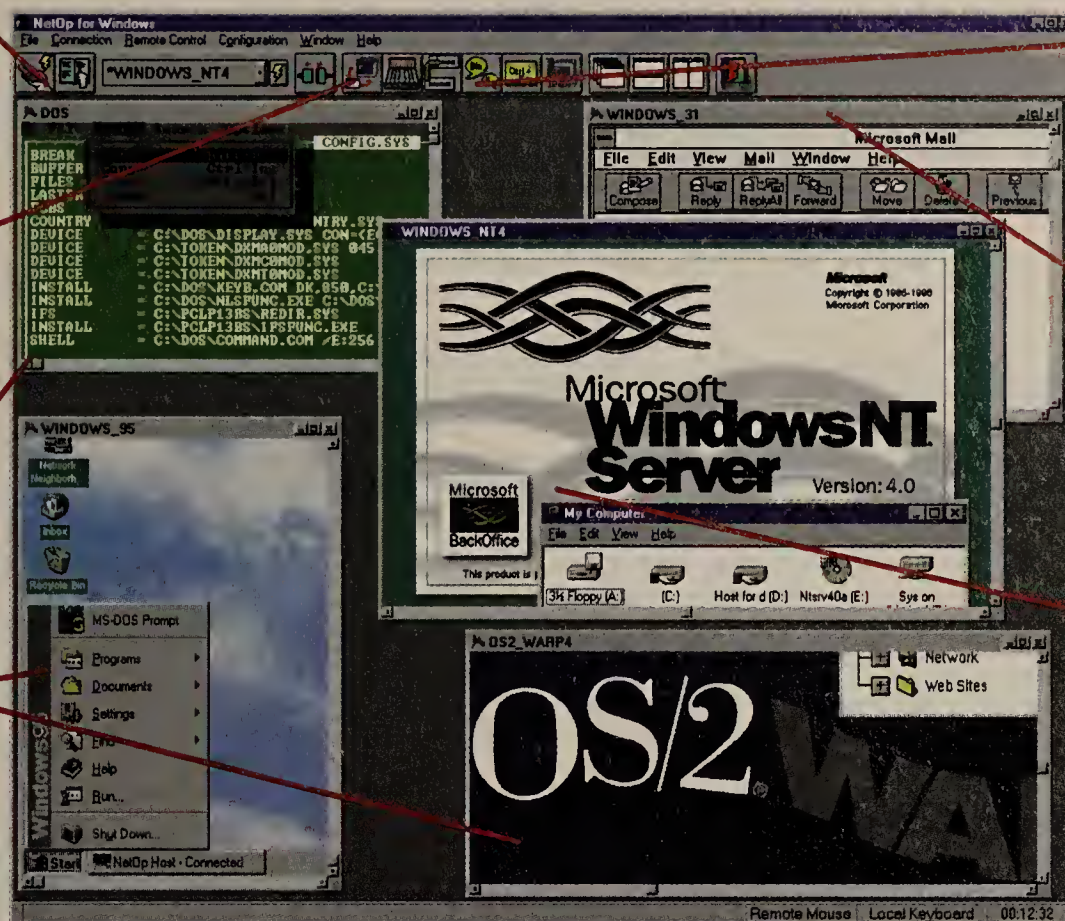
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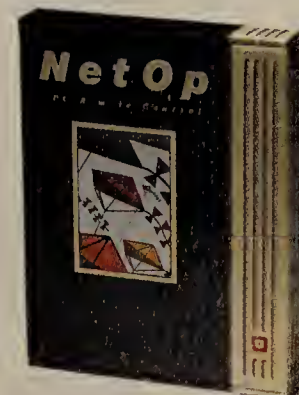
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# Williams unveils new twist on frame relay

By David Rohde  
Tulsa, Okla.

Williams Communications has unveiled a new type of frame relay service designed to avoid wasted bandwidth for

users and carriers while saving both a little money in the process.

Williams, one of several long-distance carriers launched this year, last week introduced Flex-CIR, its first broad-

based frame relay offering. Flex-CIR lets users reserve bandwidth levels that vary according to the time of day or the day of the week or even on the same frame relay circuit.

The new service revolves around the frame relay concept of committed information rate (CIR). The CIR assigned to a particular permanent virtual circuit is the amount of traffic protected against discard if the network becomes congested.

Most frame relay carriers allow users to choose a fixed CIR for each circuit. The price of the circuit usually depends on the chosen CIR, although users may send discard-eligible traffic at higher speeds if conditions warrant.

Under Flex-CIR, users can assign one CIR to a circuit for Monday through Friday, and another for the weekend, explains Mark Heaton, Williams' frame relay product manager. Users can also

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9:30 - 10:30 Segment 2 — THE DECISION DRIVERS  
10:30 - 11:00 Break and Product Information  
11:00 - 12:15 Segment 3 — GIGABIT ETHERNET STRATEGIES  
12:15 - 1:15 Complimentary Lunch and Product Information  
1:15 - 3:00 Segment 4 — TECHNICAL ISSUES AND OPTIONS  
3:00 - 4:00 Segment 5 — THE FUTURE

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#### How Williams' charges work

An example of pricing a one-way frame relay PVC under Williams' Flex-CIR:

User chooses the following CIRs for the circuit:

9 a.m. to 5 p.m. (8 hours): 1.024M bit/sec  
5 p.m. to 7 p.m. (2 hours): 128K bit/sec  
7 p.m. to 9 a.m. (14 hours): 64K bit/sec

CIRs ordinarily carry the following monthly charges:

1.024M: .....\$636  
128K: .....\$80  
64K: .....\$40

The prorated calculation:

8/24 \$636 = .....\$212  
2/24 \$80 = .....\$7  
14/24 \$40 = .....\$23

Add the speed change fee:

3 daily speed changes \$30 = .....\$90

**Total per month: .....\$332**

SOURCE: WILLIAMS, TULSA, OKLA.

assign one CIR for the business day, another for the early evening hours and a third for overnight. Williams then calculates a prorated average of the price of the CIRs to come up with the monthly charge (see graphic).

Flex-CIR does come with a bit of a catch. Each prearranged daily speed change tacks \$30 onto the monthly bill. And like other frame relay carriers, Williams requires users to purchase a port on its network for each frame relay site. For high-speed links, users would have to buy a T-1 frame relay switch port because of the high daytime CIR, regardless of night speeds. That port costs \$1,856 per month.

Still, "it's a cool idea," says Steve Taylor, president of Distributed Network Associates, a Greensboro, N.C., consultancy that specializes in WAN services. Large carriers have often promised switched virtual circuits (SVC) based on the same concept of avoiding wasted bandwidth reservations, he says. "Now you can get one of the perceived or advertised advantages of SVCs without actually having to do SVCs," Taylor says.

© Williams: (800) 945-5426



# Local Networks

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## Briefs

■ **Hitachi Internet-working** is adding a second ATM port and hardware-based Layer 3 switching to its HiSpeed 160 switch. The switch combines 12 10/100M bit/sec



Hitachi's HiSpeed 160 switch

Ethernet ports with two OC-3 ATM uplinks, making it easy to link Ethernet workgroups to an ATM backbone. The HiSpeed costs \$11,995 and is shipping now.

© Hitachi: (408) 986-9770

■ **Legato Systems** has extended its **Enterprise Storage Management Architecture** platform to support storage-area networks (SAN), remote and mobile PCs, and EMC storage environments. Legato said it will work with SAN hardware vendors to ensure that their products can be managed via Legato software. On the remote and mobile PC front, Legato is teaming with Stac to deliver NetWorker Remote 1.0 in the fourth quarter. Legato is working with EMC on a product called NetWorker for EMC, which initially is available for users running Oracle database applications on Solaris machines. SAP, NT and HP-UX support is in the works.

© Legato: (650) 812-6000

■ **Hewlett-Packard** is shipping the fourth release of **HP OpenView Professional Suite for NetWare and Windows NT**. The software now has Web-based HP TopTools for Desktops and Servers, which gives customers a Web interface to manage their computers.

The new version of the HP suite is shipping now for Windows 95 and NT, and sells for \$1,495. Upgrades are available for \$795.

© HP: (800) 752-0900

## New breed of vendors embrace thin clients

By John Cox

The emergence of thin-client software and hardware has spawned a new industry: companies that broker deals among software makers, hardware vendors and ISPs to deliver high-speed access to Windows applications and the Internet.

Microsoft has been pitching its Windows NT Terminal Server Edition (TSE) software mainly as a replacement for traditional terminals attached to Unix hosts or mainframes.

But companies such as Veicon Technology of Beaverton, Ore., and The Learningstation.com of Charlotte, N.C., are gambling that TSE will enable them to serve up remote applications to an array of client devices: traditional PCs, Windows terminals and eventually information appliances such as handheld computers, digital assistants and Web phones.

Veicon has just delivered its V-Link thin-client system to the Sheraton Park Central Hotel in Dallas, which plans to offer guests access to e-mail and other applications via Windows terminals in public areas and possibly in guest rooms.

The V-Link client consists of a Wyse Technology Windows terminal, a credit card reader and some Veicon code that handles tasks such as credit card authorization and e-mail access.

Veicon or an ISP hosts the TSE server, the companion MetaFrame software from Microsoft partner Citrix Systems and the Veicon server code.

Al Roberts, a systems and telecommunications analyst at the hotel, is getting ready to test the system, and he already likes what he sees. "It's very attractive," Roberts says. "There are no moving parts."

Veicon not only is supplying the hotel with the thin-client package but also will provide remote access servers to which guests can dial in.

The hotel only needs to arrange for a dedicated

Internet connection.

Under its agreement with Veicon, the hotel will receive a monthly check for part of the revenue generated from guests using the system.

Under the setup, the hotel will be able to offload Internet data calls from its PBX and col-

lect revenue that otherwise would go to ISPs.

Veicon is marketing its thin-client system to hotels, ISPs and airports.

ISPs are using this server-based computing model to offer their customers access to network-based applications

such as e-mail and personal applications such as Microsoft Word or Excel.

Traverse Internet is among the ISPs using Veicon's offering. The ISP hosts applications on a server that hotel and resort guests can access via Windows terminals in their rooms or a lobby, says Victor von Schlegell, president and CEO of the Traverse City, Mich., ISP.

The terminals connect to the server via ISDN or a cable modem link, he says.

Von Schlegell thinks this service could become a major source of revenue for his company.

"The more applications that  
*See Thin client, page 16*



### NEW VENDORS OFFER APPLICATION SERVICES VIA WINDOWS NT TSE

- ▶ Hotel guests or air travelers activate terminal with a credit card.
- ▶ Remote servers host Web browsers, e-mail access and office applications.
- ▶ High-speed connections deliver good performance.

## Bay airs wireless LAN gear

*Technology comes from Netwave acquisition.*

By Jim Duffy

Bay last week rolled out its first wireless LAN products for users who need to untether themselves from immobile wired workgroups.

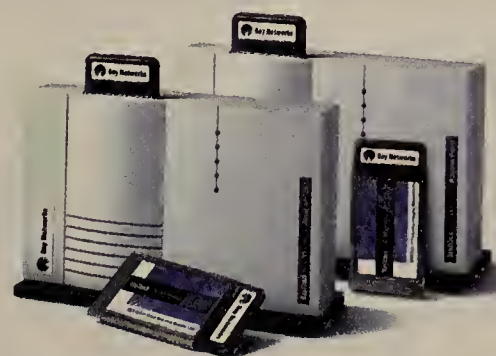
The BayStack 600 series consists of two products: the BayStack 650, which is based on the IEEE 802.11 standard for wireless LANs that use frequency-hopping spread spectrum technologies; and the BayStack 660, which uses 802.11 direct-sequence spread spectrum.

Both models include a wireless network interface card (NIC) and hub, or access point, and are based on products Bay obtained from its purchase of Netwave earlier this year.

Each access point supports 10 to 20 users under load and a maximum of 50 users. The typical transmission range is 100 to 300 feet, but in an open environment the range can extend to 2,000 feet, Bay says.

Frequency hopping allows

the BayStack 650 to support 1M bit/sec of bandwidth per segment, though 10M bit/sec can be achieved by overlapping access points.



Bay gets unplugged with these new wireless LAN hubs and adapter cards.

The BayStack 660 can support 2M bit/sec per segment and up to 6M bit/sec by overlapping three access points.

### Target markets

Bay is targeting its wireless LAN products at companies with mobile executives, managers and staff who need immediate access to e-mail, help desk information and other network-based data. The products are also applicable for schools that need a flexi-

ble way to connect a mobile population.

"The students need the convenience of not having to plug in and trip over wires," says Phyllis Cygan, executive director of the Heritage Oak Elementary School in Orange County, Calif., which has been using Netwave's wireless LAN technology for about a year. Heritage Oak supports 15 to 20 staffers and at least 15 students on its wireless LAN, Cygan says.

"If you can imagine 25 students hooked up to a hub, you have 25 spaghetti wires running out of the walls, which becomes a nightmare in many ways," Cygan says. "It's hard to travel around the room, plus figuring out whose wire is whose as we're trying to close the class down and move on — that's a real time-consuming issue."

The only downside to the BayStack 600 products, Cygan says, is that sometimes students knock the access points off the wall and connections are lost.

The BayStack 650 NIC costs \$499, while the access point costs \$1,499. The BayStack 660 NIC costs \$569, while the access point is priced at \$1,799. Both models are available now.

© Bay: (408) 988-2400



# Novell pops Y2K tool into ZENworks

By Paul McNamara  
Provo, Utah

NetWare customers grappling with Year 2000 problems may find help in ZENworks 1.1, an upgraded desktop management tool that Novell plans to ship later this year.

Last week Novell and Greenwich Mean Time (GMT), a British maker of Year 2000 software, announced that GMT's Check 2000 product would be bundled and would work as a snap-in with ZENworks 1.1. Check 2000 finds and fixes Year 2000 compliance problems with PC Basic I/O Systems, operating systems, applications and data held by or shared between databases and spreadsheets.

Used in conjunction with

ZENworks and Novell Directory Services, Check 2000 will allow customers to remotely assess Year 2000 compliance on PC desktops and distribute new software or patches as

needed, according to the companies.

In addition, the combination of products will allow administrators to set desktop configuration policies and monitor end-user adherence.

Customers who apply Year 2000 desktop fixes manually risk more than simply running out of time, according to Novell.

"They'll go to every single PC painstakingly, and by the time they go from the first one to the last one, a year has passed," says Michael Simpson, a Novell product manager. "The PC they

started with could be completely changed by then and replaced by something else," which may or may not be Year 2000-compliant, he says.

According to GMT, the vast majority of companies have yet to address Year 2000 compliance at the desktop level.

"We did a survey of all the

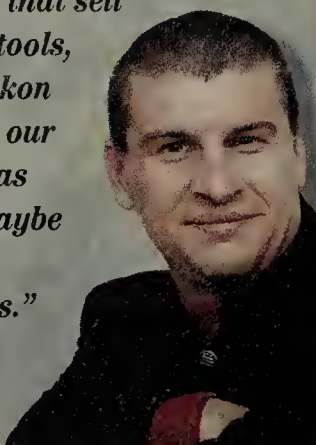
other companies that sell Year 2000 tools, and we reckon that so far our industry has checked maybe 1% of the world's PCs," says Karl Feilder, CEO of GMT.

Due to ship in the fourth quarter, ZENworks 1.1 will cost \$39 per node and include a free five-user version of GMT's Check 2000. Additional copies of Check 2000 will cost \$15 per user.

© Novell: (801) 429-7000

*"We did a survey of all the other companies that sell Year 2000 tools, and we reckon that so far our industry has checked maybe 1% of the world's PCs."*

Karl Feilder,  
CEO, GMT



## Microsoft snaps up clustering vendor

By Rebecca Sykes  
Redmond, Wash.

Microsoft last week announced that it has acquired Valence Research, a maker of TCP/IP load-balancing and fault-tolerance software for Windows NT.

The terms of the purchase were not disclosed. Valence makes Convoy Cluster Software, which is designed to increase the scalability and fault tolerance of Windows NT

products, including outbound Simple Mail Transfer Protocol mail service in Microsoft Exchange Server and Microsoft Proxy Server.

The Valence technology can be used to group up to 32 NT servers, which would be seen by users as having one IP address.

Convoy Cluster Software will be renamed Microsoft Windows NT Load Balancing Service and will complement the features already offered by

the clustering subsystem in Windows NT Server Enterprise Edition.

Microsoft plans to make the newly named software a standard component of Windows NT Server Enterprise Edition. Pricing and ordering information will be announced later this year, Microsoft says.

*Sykes is a correspondent with IDG News Service's Boston bureau.*

## Thin client

*Continued from page 15*

can be put into the thin-client format, the better," he says. "It's important to continue to look for ways to bring low-cost access to the 'Net and computing."

### Learningstation.com gets vertical

Another company delivering a TSE-based service is The Learningstation.com.

The company last week enrolled its first two manufacturing customers, which are using thin-client technology and a subscription program to access an ISP-hosted server farm.

The servers run an array of applications, including research and training software developed specifically for manufacturing companies.

Later this year, The Learningstation.com will roll out similar packages for mem-

bers of other vertical industries, such as health care, law and real estate.

The company's initial thin-client offering was aimed at school systems.

Learningstation.com is focusing on creating a huge library of specialized software to which its customers can subscribe.

The company will also work on providing very high-speed access, according to Jim Pennington, a co-founder of Learningstation.com.

© Veicon: (503) 531-2410; The Learningstation.com: (704) 509-6608

### Get more online:

- A V-Link demo.
- News and comments about hotels offering high-speed 'Net access.



[www.nwfusion.com](http://www.nwfusion.com)



## Deflating the NT 5.0 Beta 2 balloon

Well, well, I see Microsoft finally got around to releasing the second beta of Windows NT 5.0.

If you read any of Microsoft's press releases, you might have mistaken the second beta with the Second Coming. Quotes from the handful of folks who got copies of the release referred to how complete it is — the package contains roughly 75% of the announced features. Supporters also praised Beta 2's stability. (True, you can install it without crashing if you're careful, putting this beta well ahead of Beta 1).

But the truly silly stuff came from third-party vendors trying to climb to the top of the perceived NT 5.0 bandwagon. Before getting to that, though, I'll offer a reminder that most reputable analysts recommend waiting until mid-2000 before rolling out NT 5.0.

If you just can't wait — but don't want to repeat the

debacle that was the installation of Beta 1 — Micron Electronics has a deal for you called the AdvanceDeploy plan. Under the plan, Micron customers can order new ClientPro and NetFrame server systems with a Windows NT 5.0 beta preinstalled. Think about it — troubleshooting problems on new hardware with preinstalled beta software! For those of you who think "Release .0" software is actually beta, consider AdvanceDeploy as having a "post-Alpha" operating system. To make you feel better about buying into this program, IT managers in the AdvanceDeploy program will have

a support hot line dedicated to answering questions about Windows NT 5.0, according to Micron.

"Microsoft Windows NT 5.0 is widely regarded as the most significant advance in the history of personal computer operating systems," says Mark Gonzales, vice president of worldwide marketing at Micron. Of



Dave Kearns

course with a quote like that, you knew he was in marketing. It's just too bad marketing can't tell the difference between an incomplete, crash-prone beta and a fully implemented, stable released product.

NT 5.0 Beta 2 is still not complete. There will be a Beta 3, as well as numerous "release candidates" before the actual release, now predicted to be some time in mid-1999. Microsoft's rollout plan still gives you a year to test the operating system before you really roll it out after the turn of the century. Unless you're a registered technical beta tester for Microsoft, my advice is to stay away from Beta 2 — unless you really have too much free time on your hands.

*Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at [wired@vquill.com](mailto:wired@vquill.com).*

### Tip of the week

*Microsoft's Peter Brundrett has written an excellent overview of the new Kerberos-based authentication system used in Windows NT 5.0. The overview initially was published in the USENIX Association's magazine and has been posted by Microsoft at [www.microsoft.com/security/brundrett.htm](http://www.microsoft.com/security/brundrett.htm).*



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**1. What is the principal business activity at your location?** (check ONE only)

01. <input type="checkbox"/> Manufacturing (other)	10. <input type="checkbox"/> Education	18. <input type="checkbox"/> Manufacturing (Computer/Communications/DEM)
02. <input type="checkbox"/> Finance/Banking	11. <input type="checkbox"/> Process Industries (Mining/Construction/Petroleum Refining/ Agriculture/Forestry)	19. <input type="checkbox"/> Resellers of Computer/Network Products (VARs, VADs)
03. <input type="checkbox"/> Insurance/Real Estate/Legal	12. <input type="checkbox"/> Government (Federal/State/Local)	20. <input type="checkbox"/> Systems/Network Integrators*
04. <input type="checkbox"/> Health Care Services	13. <input type="checkbox"/> Military	21. <input type="checkbox"/> Distributors (Computer/Communications)*
05. <input type="checkbox"/> Hospitality/Entertainment/Recreation	14. <input type="checkbox"/> Aerospace	22. <input type="checkbox"/> Other (please specify) _____
06. <input type="checkbox"/> Media/TV/Cable /Radio/Print	15. <input type="checkbox"/> Consulting (Independent)*	
07. <input type="checkbox"/> Retail/Wholesale Trade/Business Services	16. <input type="checkbox"/> Carriers/Interconnects	
08. <input type="checkbox"/> Transportation	17. <input type="checkbox"/> Internet Service Provider (ISP)	
09. <input type="checkbox"/> Utilities		

\* Please complete form based on largest client.

**2. What is your job function?** (check ONE only)

**NETWORK IS MANAGEMENT:**

1. <input type="checkbox"/> Network Management	4. <input type="checkbox"/> IS/IT/MIS/CID/Systems Management	7. <input type="checkbox"/> Corporate Management (CED, Pres., VP, Dir., Mgr., Financial Management)
2. <input type="checkbox"/> LAN Management	5. <input type="checkbox"/> Internet/Intranet/Electronic Commerce Mgmt., Webmaster	8. <input type="checkbox"/> Consultant (Independent)
3. <input type="checkbox"/> Datacom/Telecom Management	6. <input type="checkbox"/> Engineering Management	9. <input type="checkbox"/> Other _____

**3. What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of?** (Please print the appropriate number code on the line next to each product category. Please complete ALL categories A-H.)

1. \$100 Million or more	A _____ Large Systems (Mainframes/Minis)	G _____ Internetworking
2. \$50 Million to \$99.9 Million	B _____ Desktops (Micros/Laptops/Workstations)	H _____ Internet
3. \$25 Million to \$49.9 Million	C _____ Servers	I _____ Intranet
4. \$10 to \$24.9 Million	D _____ LANs	J _____ Extranet
5. \$1 to \$9.9 Million	E _____ WAN Equipment	K _____ Remote Access
6. \$100,000 to \$999,999	F _____ Carrier Services	L _____ Peripherals
7. \$50,000 to \$99,999		M _____ Software
8. Under \$50,000		N _____ Service/Support
9. None of the above		

**4. What is the total number of sites for which you have purchase influence?** (check ONE only)

1. ☐ 100+ 2. ☐ 50 - 99 3. ☐ 20 - 49 4. ☐ 10 - 19 5. ☐ 2 - 9 6. ☐ 1 7. ☐ None

**5. What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization?** (check ONE box in each column)

SERVERS		CLIENTS		LANs	
At Location	Entire Org.	At Location	Entire Org.	At Location	Entire Org.
A <input type="checkbox"/> 1. 50,000+	B <input type="checkbox"/>	C <input type="checkbox"/> 1. 50,000+	D <input type="checkbox"/>	E <input type="checkbox"/> 1. 50,000+	F <input type="checkbox"/>
<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>	<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>	<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>
<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>	<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>	<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>
<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>	<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>	<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>
<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>	<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>	<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>
<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>	<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>	<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>
<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>	<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>	<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>
<input type="checkbox"/> 8. none	<input type="checkbox"/>	<input type="checkbox"/> 8. none	<input type="checkbox"/>	<input type="checkbox"/> 8. none	<input type="checkbox"/>

**6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?**

**A. Scope** (check one only)

1. ☐ Corporate/Enterprise  
2. ☐ Department  
3. ☐ None

**B. Involvement** (check ALL that apply)

1. ☐ Create Network Strategy  
2. ☐ Recommend/Specify  
3. ☐ Approve

4. ☐ Evaluate  
5. ☐ Determine the Need  
6. ☐ None

**7. What is the estimated number of employees at your location/in entire organization?** (check ONE in each section)

<b>A. At your location:</b>	<b>B. Entire organization:</b>
1. <input type="checkbox"/> Over 20,000	1. <input type="checkbox"/> Over 20,000
2. <input type="checkbox"/> 10,000 - 19,999	2. <input type="checkbox"/> 10,000 - 19,999
3. <input type="checkbox"/> 5,000 - 9,999	3. <input type="checkbox"/> 5,000 - 9,999
4. <input type="checkbox"/> 2,500 - 4,999	4. <input type="checkbox"/> 2,500 - 4,999
5. <input type="checkbox"/> 1,000 - 2,499	5. <input type="checkbox"/> 1,000 - 2,499
6. <input type="checkbox"/> 500 - 999	6. <input type="checkbox"/> 500 - 999
7. <input type="checkbox"/> 250 - 499	7. <input type="checkbox"/> 499 or less
8. <input type="checkbox"/> 249 or less	

**8. Please indicate the products/services that you are currently involved in purchasing or plan to purchase:** (check ALL that apply)

**A. Currently involved in purchasing** **B. Plan to purchase**

**INTERNET/INTRANET**

A <input type="checkbox"/> 01. Internet Services/Web Hosting	A <input type="checkbox"/> 07. Voice/Video Over IP	A <input type="checkbox"/> 12. Web Browsers
A <input type="checkbox"/> 02. Firewalls/Security/Encryption	A <input type="checkbox"/> 08. VPN Equipment/Services	A <input type="checkbox"/> 13. Intranet Applications/Groupware
A <input type="checkbox"/> 03. Web Servers/Software	A <input type="checkbox"/> 09. Legacy Integration Tools (Web to Host)	A <input type="checkbox"/> 14. Search/Retrieval Products (web crawler)
A <input type="checkbox"/> 04. Web Servers/Hardware	A <input type="checkbox"/> 10. Web Development Tools (JAVA, ActiveX, etc.)	A <input type="checkbox"/> 15. Electronic Commerce Tools
A <input type="checkbox"/> 05. TCP/IP Software	A <input type="checkbox"/> 11. Push Technology	A <input type="checkbox"/> 16. Web Authoring Tools
A <input type="checkbox"/> 06. Management/Monitoring Software		A <input type="checkbox"/> 17. Other _____

**LOCAL-AREA NETWORKS/ INTERNETWORKING**

A <input type="checkbox"/> 18. Local-Area Networks	A <input type="checkbox"/> 28. Layer 3 Switches	A <input type="checkbox"/> 37. UPS
A <input type="checkbox"/> 19. Network Operating System Software	A <input type="checkbox"/> 29. Network Storage Devices (NASs, SANs)	A <input type="checkbox"/> 38. Network Interface Cards (NICs)
A <input type="checkbox"/> 20. Servers	A <input type="checkbox"/> 30. LAN Storage/Backup	A <input type="checkbox"/> 39. Hubs
A <input type="checkbox"/> 21. Print Servers	A <input type="checkbox"/> 31. Optical Storage/Backup/Jukeboxes	A <input type="checkbox"/> 40. Intelligent Hubs
A <input type="checkbox"/> 22. Routers	A <input type="checkbox"/> 32. Disk Storage/Backup	A <input type="checkbox"/> 41. Stackable Hubs
A <input type="checkbox"/> 23. ATM Switches	A <input type="checkbox"/> 33. Tape Storage/Backup	A <input type="checkbox"/> 42. Bridge/Router
A <input type="checkbox"/> 24. Token-Ring Switches	A <input type="checkbox"/> 34. RAID Storage/Backup	A <input type="checkbox"/> 43. SNMP Network Management
A <input type="checkbox"/> 25. Ethernet Switches	A <input type="checkbox"/> 35. Network Test/Diagnostic Tools	A <input type="checkbox"/> 44. Gateways
A <input type="checkbox"/> 26. Fast Ethernet	A <input type="checkbox"/> 36. Cables, Connectors, Baluns	A <input type="checkbox"/> 45. Concentrators/Repeaters
A <input type="checkbox"/> 27. Gigabit Ethernet		A <input type="checkbox"/> 46. Other (please specify) _____

**COMPUTERS/PERIPHERALS**

A <input type="checkbox"/> 47. Thin Clients/Network Computers (NCs)	A <input type="checkbox"/> 50. Minis	A <input type="checkbox"/> 54. CD-R/DVD
A <input type="checkbox"/> 48. Laptops/Notebooks/Sub-Notebooks	A <input type="checkbox"/> 51. Mainframes	A <input type="checkbox"/> 55. Fax/Modem Boards
A <input type="checkbox"/> 49. Micros/PCs	A <input type="checkbox"/> 52. Workstations	A <input type="checkbox"/> 56. Memory/Chips/Boards/Cards
	A <input type="checkbox"/> 53. Printers/Network Printers	A <input type="checkbox"/> 57. Other _____

**REMOTE/WIRELESS COMPUTING**

A <input type="checkbox"/> 58. Remote Access Products	A <input type="checkbox"/> 61. PCMCIA Devices	A <input type="checkbox"/> 63. Cellular Equipment & Services
A <input type="checkbox"/> 59. Remote Access Services	A <input type="checkbox"/> 62. Wireless Data Equipment/Services	A <input type="checkbox"/> 64. Other (please specify) _____
A <input type="checkbox"/> 60. PDAs		

**SOFTWARE/APPLICATIONS**

A <input type="checkbox"/> 65. Network Management	A <input type="checkbox"/> 75. EDI	A <input type="checkbox"/> 84. Data Warehousing
A <input type="checkbox"/> 66. Systems Management	A <input type="checkbox"/> 76. E-mail	A <input type="checkbox"/> 85. Anti Virus Software
A <input type="checkbox"/> 67. Security	A <input type="checkbox"/> 77. Desktop Videoconferencing	A <input type="checkbox"/> 86. Multimedia
A <input type="checkbox"/> 68. Communications Software	A <input type="checkbox"/> 78. Imaging	A <input type="checkbox"/> 87. Yr. 2000 Conversion Software (Y2K)
A <input type="checkbox"/> 69. Terminal Emulation	A <input type="checkbox"/> 79. Suites/Server Suites (Back Office, etc.)	A <input type="checkbox"/> 88. Helpdesk
A <input type="checkbox"/> 70. Operating Systems	A <input type="checkbox"/> 80. Middleware	A <input type="checkbox"/> 89. Web Based Management Tools
A <input type="checkbox"/> 71. Applications Development Tools	A <input type="checkbox"/> 81. Document Management	A <input type="checkbox"/> 90. Directory Services
A <input type="checkbox"/> 72. Database Management/ RDBMS	A <input type="checkbox"/> 82. Site Metering Tools	A <input type="checkbox"/> 91. Other (please specify) _____
A <input type="checkbox"/> 73. Groupware	A <input type="checkbox"/> 83. Computer Telephony Integration (CTI)	
A <input type="checkbox"/> 74. Workflow		

**WIDE-AREA NETWORK EQUIPMENT & SERVICES**

A <input type="checkbox"/> 92. 56 Kbps Modems	A <input type="checkbox"/> 99. xDSL Services/Products	A <input type="checkbox"/> 108. Managed LAN/Router Services
A <input type="checkbox"/> 93. Under 56 Kbps Modems	A <input type="checkbox"/> 100. Diagnostic/Test Equipment	A <input type="checkbox"/> 109. Other _____
A <input type="checkbox"/> 94. Cable Modems	A <input type="checkbox"/> 101. DSU/CSU	
A <input type="checkbox"/> 95. Asynchronous Transfer Mode (ATM)	A <input type="checkbox"/> 102. PBXs	A <input type="checkbox"/> 110. Outsourcing/Systems Integration Services
A <input type="checkbox"/> 96. Frame Relay Equipment/Services	A <input type="checkbox"/> 103. Videoconferencing	A <input type="checkbox"/> 111. Education/Training Services
A <input type="checkbox"/> 97. ISDN Equipment & Services	A <input type="checkbox"/> 104. Leased Lines	
A <input type="checkbox"/> 98. FT-1/T-1/T-3 Multiplexers/Services	A <input type="checkbox"/> 105. Switched Data	A <input type="checkbox"/> 112. None of the above (1-111)
	A <input type="checkbox"/> 106. Virtual Private Networks (VPN)	
	A <input type="checkbox"/> 107. FRADs	

**9. Please indicate the platforms that are currently installed/planned:** (check ALL that apply)

**A. Currently installed** **B. Planned for purchase**

**NETWORK PROTOCOLS**

A <input type="checkbox"/> 01. TCP/IP	A <input type="checkbox"/> 04. Novell IPX/SPX	A <input type="checkbox"/> 07. NFS
A <input type="checkbox"/> 02. IPv6	A <input type="checkbox"/> 05. APPC/APPN/LU 6.2	A <input type="checkbox"/> 08. SNMP
A <input type="checkbox"/> 03. SNA	A <input type="checkbox"/> 06. NETBDS	A <input type="checkbox"/> 09. Other _____

**LAN ENVIRONMENT**

A <input type="checkbox"/> 10. Gigabit Ethernet	A <input type="checkbox"/> 14. ATM	A <input type="checkbox"/> 18. FDDI
A <input type="checkbox"/> 11. Switched Ethernet	A <input type="checkbox"/> 15. Token Ring/Token Ring Switching	A <input type="checkbox"/> 19. 100Base-T
A <input type="checkbox"/> 12. Fast Ethernet (100 Megabit Ethernet)	A <input type="checkbox"/> 16. IP Switching	A <input type="checkbox"/> 20. 10Base-T
A <input type="checkbox"/> 13. Ethernet	A <input type="checkbox"/> 17. Layer 3 Switching	A <input type="checkbox"/> 21. Fibre Channel
		A <input type="checkbox"/> 22. Other _____

**NETWORK OPERATING SYSTEM**

A <input type="checkbox"/> 23. Windows NT	A <input type="checkbox"/> 27. Novell (NetWare 4.X)	A <input type="checkbox"/> 31. IBM (Server)
A <input type="checkbox"/> 24. Windows NT/Advanced Server	A <input type="checkbox"/> 28. Novell (NetWare 2.X, 3.X)	A <input type="checkbox"/> 32. Other (please specify) _____
A <input type="checkbox"/> 25. Novell IntranetWare	A <input type="checkbox"/> 29. Microsoft (LAN Manager)	
A <input type="checkbox"/> 26. Novell (NetWare 5.X)	A <input type="checkbox"/> 30. Banyan (VINES)	

**COMPUTER OPERATING SYSTEM**

A <input type="checkbox"/> 33. NT Server	A <input type="checkbox"/> 38. Windows 95	A <input type="checkbox"/> 43. Digital VMS
A <input type="checkbox"/> 34. NT Workstation	A <input type="checkbox"/> 39. Windows 98 .9x	A <input type="checkbox"/> 44. Macintosh
A <input type="checkbox"/> 35. Unix/Xenix/AIX/SCD	A <input type="checkbox"/> 40. DOS	A <input type="checkbox"/> 45. Other _____
A <input type="checkbox"/> 36. Solaris	A <input type="checkbox"/> 41. OS/2, DS/2 Warp	A <input type="checkbox"/> 46. None of the above (1-45)
A <input type="checkbox"/> 37. Windows	A <input type="checkbox"/> 42. IBM MVS/VM/VSE	

**10. Which of the following Servers/Clients do you have installed/planned at your location?** (check ALL that apply in each column)

A. Servers	B. Clients
Power PC <input type="checkbox"/>	01. <input type="checkbox"/>
Power Mac <input type="checkbox"/>	02. <input type="checkbox"/>
Mac Other <input type="checkbox"/>	03. <input type="checkbox"/>
Multiprocessor Servers <input type="checkbox"/>	04. <input type="checkbox"/>
Pentium II (PII) <input type="checkbox"/>	05. <input type="checkbox"/>
Pentium/Pentium Pro <input type="checkbox"/>	06. <input type="checkbox"/>
	07. <input type="checkbox"/>
	08. <input type="checkbox"/>
	09. <input type="checkbox"/>
	10. <input type="checkbox"/>
	11. <input type="checkbox"/>

**11. Which of the following hardware platforms are installed/planned in your company?** (check ALL that apply)

<b>A - Mainframes (Large Scale)</b>	<b>B - Minis (Midrange)</b>	<b>C - Workstations</b>
1. <input type="checkbox"/> IBM	1. <input type="checkbox"/> IBM RS/6000	1. <input type="checkbox"/> Sun Microsystems
2. <input type="checkbox"/> Amdahl	2. <input type="checkbox"/> IBM AS/400	2. <input type="checkbox"/> Silicon Graphics
3. <input type="checkbox"/> Cray	3. <input type="checkbox"/> Digital	3. <input type="checkbox"/> Digital
4. <input type="checkbox"/> Hitachi	4. <input type="checkbox"/> Tandem	4. <input type="checkbox"/> H-P
5. <input type="checkbox"/> Unisys	5. <input type="checkbox"/> Unisys	5. <input type="checkbox"/> IBM
6. <input type="checkbox"/> Other _____	6. <input type="checkbox"/> AT&T GIS	6. <input type="checkbox"/> Other _____
	7. <input type="checkbox"/> H-P	
	8. <input type="checkbox"/> Data General	
	9. <input type="checkbox"/> Other _____	

**12. What is the estimated gross revenue of your entire company/institution?** (check ONE only)

01. <input type="checkbox"/> \$20 billion or more	05. <input type="checkbox"/> \$100 million to \$499.9 million	09. <input type="checkbox"/> \$4.9 million or less
02. <input type="checkbox"/> \$10 billion to \$19.9 billion	06. <input type="checkbox"/> \$50 million to \$99.9 million	10. <input type="checkbox"/> None of the above
03. <input type="checkbox"/> \$1 billion to \$9.9 billion	07. <input type="checkbox"/> \$10 million to \$49.9 million	
04. <input type="checkbox"/> \$500 million to \$999.9 million	08. <input type="checkbox"/> \$5 million to \$9.9 million	

**13. For which areas outside of North America do you have purchase influence?** (check ALL that apply)

1. ☐ Europe 2. ☐ Asia 3. ☐ South America 4. ☐ Australia 5. ☐ Middle East 6. ☐ None



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# Internetworks

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## Briefs

■ **IBM last week announced a rebate** for its two newly introduced **Network Utility boxes** that translate SNA into IP and vice versa.

When users purchase the 2216 Network Utility tn3270 Server or Network Utility Transport devices with a minimum of 256M bytes of memory, they can get a \$5,000 rebate if they upgrade either device to a 512M-byte capacity.

The boxes must be ordered by Nov. 13, and the upgrade request must be made by Dec. 31.

© IBM: (800) 426-4968

■ At last week's meeting of the Internet Engineering Task Force, **Attachmate** and **IBM** proposed an industry-standard method of accessing legacy applications residing on IBM mainframes or AS/400 mid-range boxes via the Internet.

The **Open Host Interface Objects proposal** defines a set of interfaces and object classes that allow Web-to-host applications to more easily access host systems. The idea is to let developers and users build open applications that are not tied to a particular vendor's proprietary access methods.

© IBM: (800) 426-4968;  
Attachmate: (800) 426-6283

■ **Tivoli Systems** is bringing printers and other output devices into the management fold, with the shipment of **Tivoli Output Manager**.

The new software lets users automate report delivery from their desktops and more closely track distribution of content for intranets and Web sites.

Output manager can also work with IBM's InfoPrint Manager to control large print jobs.

Output Manager is part of the Tivoli Enterprise Software suite and is shipping now with a starting cost of \$11,500.

© Tivoli: (800) 284-8654

## In - Site

### Bossier City police have wireless IP net locked up

By Marc Songini  
Bossier City, La.

Bossier City says its wireless high-speed network is making the wheels of justice spin faster.

The city's police department recently completed the first phase of installing an IP wireless system that lets officers in cruisers access data directly from their IBM Thinkpads — without going through a radio dispatcher. The new system, based on IBM software and hardware, helps officers in cruisers access information, such as motor vehicle registration and criminal records, more quickly than they could using the department's old radio setup.

Faster response times mean greater safety for the officer, a primary concern for the city.

IBM's eNetwork Wireless software made the network possible. The software lets officers in cruisers download tn5250 terminal emulation screens from the police headquarters' AS/400 server (see graphic).

The department decided to implement the wireless network because of the limitations imposed by the old radio dispatching system, in which offi-

cers would call headquarters, and the dispatcher would access the computer and read the information back.

Not only was the old setup slow — leaving the officer vulnerable and alone with potential suspects — but it also prevented officers from making queries in volume, says Keith Rider, the department's director of information services. He says a lot of criminals "slip through the cracks" because many police departments don't have adequate technology to catch them.

Realizing the radio dispatch method wasn't feasible to handle the number of inquiries officers wanted to make, Rider began shopping around for a way to bring the data directly into the department's 75 cruisers without another person's intervention. Rider says most of the competing systems he evaluated were proprietary and could handle only a limited number of applications.

The eNetwork Wireless package includes an eNetwork Wireless gateway; client code, called IBM Personal Communications Lite; and a server access

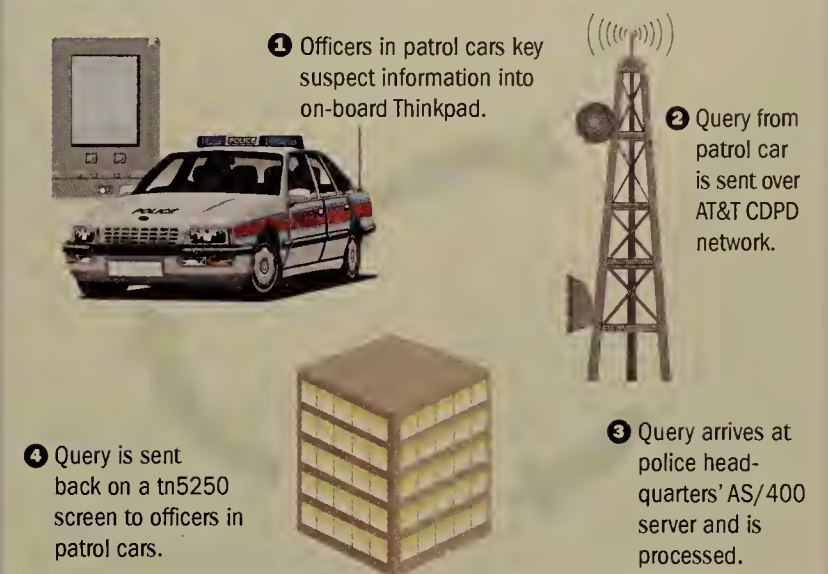
agent called Emulator Express. The system uses an AT&T cellular digital packet data (CDPD) net for wireless transmissions.

Rider says the eNetwork Wireless software costs about \$25,000; the Thinkpads were

- Giving officers access to city maps and building floor plans. SWAT and emergency medical teams can be better prepared when they arrive at a crime or accident scene.

- Tying city-controlled func-

#### BOSSIER CITY'S REMOTE ACCESS NETWORK



about \$3,800 each and the CDPD services cost \$49 per unit monthly.

Other features the Bossier City Police Department plans to add are:

tions into the network so devices such as traffic signals can be activated via computer. An officer responding to an emergency call could trigger all traffic lights on his way to turn green. ■

## Cisco grows low-end routers

By Jim Duffy  
San Jose, Calif.

Customers wanting to reduce the cost of building and communicating with remote branch offices may want to consider new router features from Cisco.

Cisco this week unveiled enhancements to its 3600 and 2600 low-end series routers that will let users consolidate remote access gear such as modems.

Enhancements to the 3600 line include a new analog modem module and mixed-media Ethernet/ISDN modules. For the 2600 series, Cisco rolled out two new token-ring routers — the 2612 and 2613 — as well as analog modem mod-

ules and ISDN modules.

The analog modem modules, which fit into the 3600 and 2600 lines, support eight to 16 V.34 modems. The modules enable users to lower equipment costs by integrating dial and routing capabilities in a single product

Get more online:

- Product specs from Cisco.

- A review comparing Microsoft's software-based router with the Cisco 2514.

[www.nwfusion.com](http://www.nwfusion.com)



instead of buying separate modems and routers, Cisco says.

The mixed-media modules for the 3600 series combine a single 10/100M bit/sec Ethernet port with two ISDN Primary Rate Interface or channelized T-1/E-1 ports. The modules, which support optional integrated DSUs/CSUs, let Ethernet users dial in to or out of an enterprise or ISP network at a lower cost by using an integrated device rather than separate equipment.

The 2612 and 2613 routers are the first in the 2600 line that support token-ring or mixed token-ring/Ethernet environments.

The 2612 features token-ring and Ethernet LAN ports, and

the 2613 supports a single token-ring interface.

The ISDN cards for the 2600 line support one or two PRI ports, or four or eight Basic Rate Interface ports. With these modules, users can support ISDN PRI or BRI ports in the same chassis, enabling networks to grow without replacing router chassis.

The analog modem modules cost \$2,200 to \$4,400 and are available now. The mixed-media Ethernet/ISDN modules cost from \$4,450 to \$6,450 and will be available in September.

The 2612 costs \$2,995, and the 2613 costs \$2,495. Both are available now.

The ISDN cards for the 2600 start at \$105 per B channel.

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# Carriers & ISPs

Covering: The Internet • Interexchange and Local Carriers • Wireless • Regulatory Affairs • Voice Equipment

## Briefs

■ In a \$21 million stock deal, **Level 3 Communications** of Omaha, Neb., is **acquiring GeoNet Communications**, a Redwood City, Calif.-based regional ISP. GeoNet will be merged with Level 3 and is expected to give the IP newcomer a strong network boost in the Silicon Valley region. Level 3 is conducting beta tests for its IP-based voice and data services and plans to officially introduce services this quarter.

© Level 3: (402) 536-3677

■ **PageNet**, a Dallas-based wireless messaging service provider, recently announced **PageNet Two-Way messaging service**. Two-Way lets business users send and receive e-mail on a pocket-size Motorola device that has a keyboard and weighs less than one pound. PageNet will customize the service for business users wanting mobile workers to gain access to specific corporate intranet applications. The service is available now, starting at \$24.95 per month. The Motorola device is available for \$360.

© PageNet: (972) 801-8179

■ **Sprint's** Internet backbone is getting a 2.5G bit/sec boost. The carrier is **upgrading its Internet backbone** from OC-12, 622M bit/sec to OC-48, 2.5G bit/sec. Sprint is rolling out IP over dense wave division multiplexing (DWDM), a method of sending multiple datastreams using fiber optics. DWDM lets carriers and ISPs squeeze more bandwidth out of their current fiber networks. The upgrades are expected to increase performance on Sprint's Internet backbone.

© Sprint: (972) 405-5000

## In-Site

### Users detail VPN success stories

By Denise Pappalardo

If you're waiting for the "other guy" to be the first to jump into the virtual private network (VPN) pool, get your swim trunks on. Business users are testing the VPN waters and finding they're not as treacherous as they might have thought.

Internet VPNs are proving to be a cost-effective way to keep branch-office and remote users connected. Some business users are throwing out frame relay networks, some are starting from scratch, and others are supplementing existing nets — all in favor of a VPN.

According to a recent International Data Corp. (IDC) study, enterprise business users said they expect to support 76% of their overall traffic on a VPN, says Brad Baldwin, an analyst at the Framingham, Mass., consulting firm.

One main reason why VPNs are expected to become more popular is that the cost benefits they offer are real. JetForm, an Ottawa company that develops electronic forms software, has seen its WAN infrastructure costs drop 30% since it started replacing its frame relay network with an Internet VPN.

JetForm's 30% savings on transport services alone come from the fact that dedicated



Bill Clapes of AFC Enterprise is deploying a VPN to reduce connectivity costs.

Internet access connections cost less than dedicated frame relay connections.

According to a recent *Network World*/IDC study, the average annual cost of keeping a 10-site frame relay network connected is a little more than \$1 million, compared with the \$300,000 cost of a 10-site dedicated Internet access network.

JetForm had a traditional hub-and-spoke frame relay network setup to connect 10 of the company's offices. All traffic traveled through a central location in Ottawa, which hindered network performance, says Ronald Ross, who developed JetForm's VPN and is now president of JetNet Internet-working Services, a JetForm affiliate.

JetForm was looking for a technology that could reach all 14 of its branch offices while keeping the firm's road warriors connected, Ross explains.

"We have 200 people that frequently travel and still need access to the network," he says.

The only answer was setting up an Internet-based VPN. So JetForm started taking down its 64K bit/sec AT&T frame relay connections and bringing up 128K bit/sec AT&T WorldNet dedicated Internet access connections.

But before JetForm could deploy an Internet VPN it needed to address security. Because the Internet is a pub-

lic network, security is a business priority. Where users typically feel secure using frame relay because it is based on secure permanent virtual circuits, the comfort with the Internet isn't the same.

With this in mind, JetForm turned to Shiva. JetForm started deploying Shiva's LANRover VPN Gateways at all of its dedicated sites, Ross says. The Shiva devices support the pending Internet Security IETF protocol. Security was a critical issue for Ross, who believes the company needs to support the highest encryption available. JetForm is using Triple Data Encryption Standard (DES) 168-bit key encryption throughout the U.S. and in many of its international branch offices. But in some cases JetForm is using lower encryption because of some countries' restrictions on importing encryption.

JetForm also plans to use X.509v3 digital certificates for user authentication, Ross says. "This will allow us to discontinue the use of SecureID tokens."

Digital certificates will be easier to manage because Shiva offers a certificate

See VPNs, page 20

## America Online boosts 'Net backbone, adds ISP links

By Denise Pappalardo  
Dulles, Va.

America Online is beefing up its Internet support to offer AOL users faster, more reliable 'Net access.

The online service provider has built two Internet hubs, called TeraPOPs, one in Reston, Va., and the other here, with Cisco System's 12000 Giga Switch Routers (GSR).

AOL's 12 million users will now have all of their Internet-bound traffic sent through

AOL's two TeraPOPs.

AOL deployed a total of 10 Cisco 12000 GSR devices at its two TeraPOPs, says Joe Barrett, vice president of Internet operations at AOL, also based here. The 12000 GSR is supporting multiple OC-12, 622M bit/sec packet-over-SONET connections to the Internet, he says.

In addition to beefing up the routing support at its Internet points of presence, AOL has also established dedicated peering connections

with several national ISPs.

The peering connections are designed to move traffic between AOL users and the Internet faster and with more reliability.

The ISPs connecting at AOL's TeraPOPs include AboveNet Communications, Concentric Network, Exodus Communications, GTE Internetworking and PSINet.

The TeraPOPs are upgraded POPs that previously were run by AOL's former network operator, ANS Communi-

cations, Barrett says.

WorldCom recently acquired ANS Communications in a three-way deal (NW, Sept. 15, 1997, page 6). ■

### Get more online:

- An overview of the Cisco 12000 GSR.
- A look at how ISPs build peering points to speed 'Net traffic.

[www.nwfusion.com](http://www.nwfusion.com)





## VPNs

Continued from page 19

authority server. "And road warriors don't like those SecureID cards anyway," Ross says. SecureID tokens are cards the size of a small calculator that users carry around. Users sometimes complain that the tokens can be easily lost or stolen.

Another feature JetForm plans to add to its VPN is support for IP telephony. In order to reduce long-distance telephone bills, JetForm plans to migrate some intracompany voice calls onto its VPN, Ross says.

"In some cases, individual users are racking up \$3,000 per month on long-distance calls," he says. The high bills stem from employees in Asia calling JetForm employees in Australia, for example.

While Ross says there are additional equipment costs, pain and sweat involved in migrating from frame relay to an Internet WAN, he believes it's worth the effort. JetForm expects its VPN will pay for itself in the first four to six months after all 14 JetForm sites are connected.

While JetForm dove into the VPN waters to replace its existing infrastructure, AFC Enterprise started from scratch.

AFC Enterprise is an Atlanta franchiser whose properties include Popeye's Chicken & Biscuits, Chesapeake Bagels Bakery and Café, and Cinnabon International.

AFC wanted a better way to keep its more than 2,000 franchisees' restaurants around

really part of a larger goal for the company to better support franchisees," Clapes says. "We chose the public Internet to keep the cost of connectivity down. But we also needed to address security, which is why we choose VPNet."

AFC deployed a VPNet VSU1010 gateway device at its

Clapes and his team recently finished their first phase of installations.

The project entailed deploying VPNet's client software on franchisees' PCs and training users how to access AFC Online.

Franchisees are now dialing up over the Internet to access AFC's internal Web server to get information on how to open a restaurant, secure a site, hire a crew and use the company's collaborative project management tools, Clapes says. All franchisees will be online by year-end, he says.

Whereas AFC built its dial-up VPN from the ground up, Fantom Technologies is in the process of rolling out a VPN to supplement an existing frame relay network.

Fantom, a Welland, Ontario vacuum manufacturer, is using Secure Computing's SecureZone VPN software to support its VPN, says Patrick Prue, Internet specialist at Fantom.

The SecureZone software runs on Windows NT servers. Fantom is using the software to encrypt data sent over the Internet between the company's sites.

The software supports 128-bit encryption as well as digital certificates for user authentication.

The vacuum company is not using its VPN to transport crit-

ical data yet, but Prue says the company wants to have the security and technology in place for when demand increases. While Prue sees the Internet as the network for Fantom's future, he's taking the migration slowly.

The Internet has had its fair share of reliability problems over the past few years, and Prue isn't ready to take it on the chin if critical data is lost.

Fantom is connecting three sites over the Internet, using Internet Bell Advanced Communications in Canada and MCI (soon to be Cable & Wireless) Internet access services in the U.S.

Fantom is waiting for SecureZone client software so that the company can link its sales force over the 'Net, Prue says.

The company plans to give its salespeople the ability to access the company's network and their e-mail, but the software is not yet ready, he says.

Today Fantom is using Microsoft's Routing and Remote Access Server (RRAS) to support dial-up users. While Fantom hopes to move its dial-up users onto the Internet, Prue expects he will keep the RRAS server up and running.

You never know when you'll just need plain old telephone service, Prue says. ■

### Comparing dial-up services

One of the biggest benefits of an Internet VPN is cost savings. Here is how traditional toll-free dial-up services compare with Internet dial-up services.

	Traditional toll-free	Internet
Number of users	200	200
Average hour/month/user	15	15
Hourly cost (\$)	6	2
Annual network cost (\$)	216,000	72,000
Administration (\$)	20,000	10,000
Dedicated T-1 cost (\$)	0	30,000
RAS hardware (\$)	5,000	0
Firewall (\$)	0	5,000
Total annual cost (\$)	241,000	117,000

SOURCE: IDC, FRAMINGHAM, MASS.

the world connected to company headquarters, says Bill Clapes, director of franchise systems.

Prior to deploying its all dial-up Internet-based VPN, AFC did not have network communications set up for its franchise owners, who relied on snail-mail, teleconferences and company meetings.

"Developing the VPN is

headquarters to securely support remote users with Triple DES encryption. The device can authenticate and decrypt up to 650 tunnels simultaneously, Clapes says.

"There were other solutions that offered Triple DES, but those required a box at every site. We need a simple and painless installation process," Clapes says.

## WAN MONITOR

# Hey, at least DSL is here, somewhere . . .

With regional Bell operating companies starting their tentative digital subscriber line (DSL) deployments, you may have noticed an abundance of war stories in online DSL forums. While it's easy to get caught up in the bashing, the war stories confirm that delivering mass-market, high-tech services is still not an easy task for telcos.

Last year, DSL was praised ad nauseam for how it would change the world. This year, with deployments started, we are seeing more "DSL Hurdle" stories, which, incidentally, describe the same hurdles that have been discussed since DSL's inception. Every golden child technology has its day in the sun, and then it gets ripped to shreds. Then it comes back again. The wave of DSL deployment stories — while not as supportive of the technology as before — at least confirm that deployment is starting.

You might consider the number of complaints as a twisted litmus test of an organization's sincerity and commitment to implementing high-speed DSL access.

Given the press community's penchant for juicy stories, we expect to see more deployment horror articles in the coming months.

Even though service deployment is often painful for both the service provider and the customer, these are the consequences of a new service. Every telco will have a significant learning curve for DSL, but don't think they won't learn their lessons. Telcos are still stinging from ISDN and are determined that the deployment of DSL will be different. It's still too early to tell if they'll achieve that goal.

From the stories we've seen so far, loop qualification and customer installation are two areas where we would expect to see some better services offered over the next couple of quarters.

As real-life information is gained about loop lengths, plant conditions and customer installations, the next generation of DSL access multiplexers (DSLAM), customer premises equipment and testing gear will ensure that next year's customers fare better than current early adopters.

Mind you, none of this is an excuse for poor ser-

vice or clumsy installation. The telcos need to be better here — they need to be prepared for taking orders and installing customers prior to launching the service.

From what we've seen and experienced — our firm has installed both DSL and cable modems on our internal network in more than 10 states — DSL service delivery processes are not ready for mass markets yet. There aren't sufficient ways to keep customers from falling through the cracks, which leads to, well, more horror stories.

On the other hand, we can't wait for a perfect service launch. Those who wait for all the i's to be dotted and t's to be crossed will miss the DSL boat.

Getting to the customer first is the name of the game for the next 12 months. The trick seems to be in gaining high-speed DSL customers without inflicting grossly neg-

ligent and painful service delivery processes on those users at the same time.

Briere is president and Heckart is vice president of TeleChoice, a consultancy in Boston. They can be reached at [dbriere@telechoice.com](mailto:dbriere@telechoice.com) and [checkart@telechoice.com](mailto:checkart@telechoice.com).



Daniel Briere  
Christine Heckart



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*Frame relay/ATM interworking*

# Building hybrid backbones



George Yeager had a critical decision to make: He wanted to help his company save money on a major WAN upgrade without jeopardizing mission-critical applications.

The main data center location in Columbus, Ohio, for the Columbia Energy Group required seven T-1 ports on AT&T's frame relay network just to handle the data traffic arriving from about 140 sites nationwide.

Yeager, manager of architecture and design for Columbia Energy's Enterprise Multimedia Communications unit, knew that was an inefficient setup because some access lines could lie fallow while others were all used up. He also knew that four of the company's other locations across the country were generating enough traffic to justify higher speed connections.

Yeager had the following choices to upgrade the network:

- Add more T-1 frame relay ports at the high-volume sites and pay the extra access costs.
- Pack more circuits from remote sites onto each T-1 data center frame relay port and hope the network wouldn't get congested.
- Migrate to ATM to get T-3 connectivity and convert all the branches to T-1 or slower speeds.

Yeager's decision: None of the above. Instead, he chose frame relay-to-ATM interworking, a type of hybrid network that requires no change in configuration at branch offices while upgrading data centers.

"We thought an all-ATM network was premature and too expensive," Yeager says.

Columbia Energy, a large natural-gas pipeline and distribution company, will now have T-3 ATM connections at the heavy-duty locations while the branch offices retain their frame relay links. "The conversion is entirely accomplished in the AT&T network," Yeager says.

Yeager is following an increasingly popular path in which users are choosing to migrate only the locations that need broadband access to ATM in a two-tier WAN design (see graphic).

But before you consider implementing frame-to-ATM interworking, make sure you know exactly what the carrier is offering. There are three different flavors of interworking standards:

The first, Frame Relay-to-ATM Network Interworking, is a Frame Relay Forum standard that's nice to know about but doesn't really produce extra user benefits. The standard allows frame relay switches to chop variable-length frame relay packets into fixed-length ATM cells and put those cells back together into frames. Also known as Implementation Agreement FRF.5, the technology is usually installed on carrier

By David Rohde

switches. Deploying FRF.5 lets the carrier sell an all-frame relay network even though the carrier cloud is really ATM.

The second flavor, Frame-based User-to-Network Interface (FUNI), is an ATM Forum standard. FUNI defines a datagram that looks a lot like a frame relay packet but with certain variations in its header. The changes enable the frame to match the way ATM cells perform functions such as multiprotocol encapsulation and class of service (CoS). FUNI interfaces are

nology does not provide additional bandwidth to any of the customer locations. That leaves users seeking additional WAN horsepower to choose between FUNI and service interworking.

FUNI gives users the benefits of ATM at relatively low-traffic sites without forcing them to accept ATM's big disadvantage — the fact that 5 bytes out of every 53 are lost to overhead. But FUNI interfaces and frame relay interfaces aren't exactly the same, so a lot of customer premises equipment software has to be swapped out.

Service interworking, by contrast, requires no changes at all at the frame relay sites. Yet it can

have a positive impact on overall network performance. Consider a situation in which an end user at a frame relay site is sending traffic to an ATM-based data center, explains Tom Siracusa, general manager of AT&T's Data Network Design & Performance Analysis Group. When the traffic hits a switch on the AT&T network it sends the traffic along. The switch doesn't wait until it has received the entire frame relay datagram, which might run 1,500 bytes.

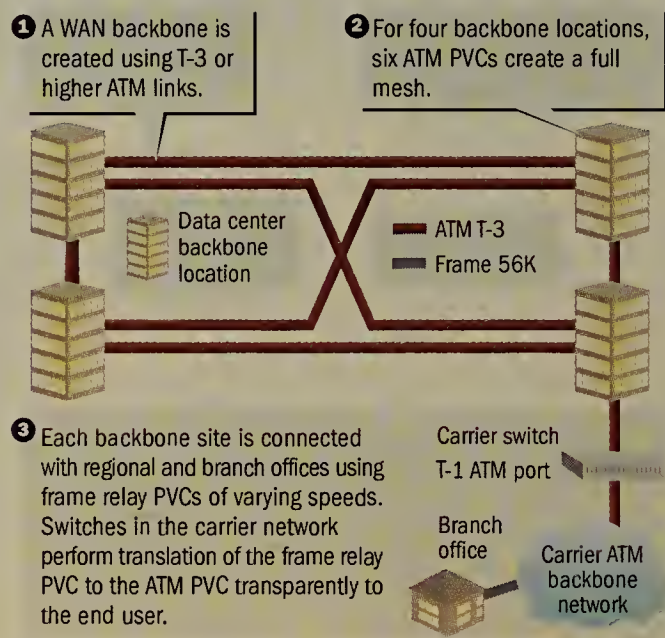
But the failure of FUNI to take off leaves some gaps in functionality. Unlike FUNI, service interworking does not support many of ATM's CoSes back to the frame relay site.

Siracusa concedes that the only ATM service class that works perfectly under AT&T service interworking is ATM variable bit rate nonreal time. Yet many users say that's acceptable because their initial reason for installing service interworking was to cost-effectively boost network speeds and feeds.

Columbia Energy concentrated on boosting its data capacity rather than worrying about CoSes. Largely because its frame relay/ATM network carries mission-

## BACKBONE MESH WITH A BRANCH STAR NETWORK

Frame Relay-to-ATM Service Interworking is increasingly being used to create tiered WANs. These WANs can handle large numbers of branch offices without requiring an excessive number of ports or PVCs.



critical traffic that regulates the flow of gas through the company's pipelines, Yeager chose not to rely on the technique of oversubscription. That's the practice of assigning, say, twice as much frame relay bandwidth coming off remote sites to a single data center port, which would result in an oversubscription ratio of 200%.

Because Columbia Energy is only willing to run a maximum 125% oversubscription, the T-3 ATM links in the center of the network were key to obtaining the needed bandwidth cost-effectively, Yeager says. Even better, the new T-3 access link can also replace a mishmash of additional T-1 and subrate dedicated access lines for Columbia's call center and outbound voice traffic. ■

designed to be installed at branch offices while the data center upgrades to a private ATM switch or T-3 access into the carrier's ATM net.

The third standard, Frame Relay-to-ATM Service Interworking, was ratified by the Frame Relay Forum in 1995 and is also known as Implementation Agreement FRF.8. In addition to chopping frames into cells, FRF.8 maps a company's frame relay permanent virtual circuits to its ATM PVCs. That way, users can install standard frame relay links at some sites and standard ATM links at others.

Of the three standards, many frame relay users already enjoy network interworking because their carriers use it on their backbones. But the tech-



# Intranet Applications

Covering: Messaging • Groupware • Databases • Multimedia • Electronic Commerce • Security

## Briefs

■ **Firewall maker CyberGuard** last week said it has **suspended two of its top executives** and plans to restate its financial results for the third quarter, ended March 31. The results may prove to be off base to the tune of \$2.5 million, according to the Fort Lauderdale, Fla., company. A special committee will take control of the company in the wake of the suspensions of Robert Carberry, CyberGuard's chairman and CEO, and Bill Murray, the company's chief financial officer. At issue is CyberGuard's revenue recognition policy, an accounting procedure that determines when a company can officially acknowledge revenue, according to a company spokeswoman.

■ **Oracle** has announced plans to acquire call center software vendor **Versatility** for about \$12 million. Versatility's line of computer telephony integration-enabled software will add an outbound telemarketing function to Oracle's existing inbound call center service application, Oracle says. Versatility's software enables call routing, third-party call control, coordinated call transfers and screen synchronization.

■ **Security product vendor Axent Technologies** last week said it is acquiring **Secure Network Consulting**, an information security consulting firm in San Antonio, Texas. Terms of the agreement were not disclosed. Axent says the acquisition will let the company complement its products with services for designing and managing security infrastructures. Axent, based in Rockville, Md., offers a product suite that includes security assessment, intrusion detection, remote access security, single sign-on and other tools.



## E-comm firms prove to be money magnets

By Chris Nerney

BigBook, Inc. of San Francisco runs an online equivalent of the Yellow Pages. CrossRoute Software of Redwood Shores, Calif., makes supply-chain management software.

Online Monitoring Services of Alexandria, Va., offers business-to-business intellectual property protection services on the Internet.

These companies are in entirely different market segments, but the firms have two things in common:

- They are among the more than 200 network companies that received a record total of \$1.14 billion in venture capital in the second quarter, according to the latest PricewaterhouseCoopers/Network World Venture Capital Survey

- They are part of a huge wave of electronic commerce software and services companies that are building the infrastructure for the Internet economy.

### Business first

In particular, start-ups targeting business customers are attracting heavy backing from venture capitalists and other investors.

"Unequivocally, the Internet action is in the business-to-business side," says Kirk Walden, director of the quarterly survey.

CrossRoute, for example, received \$8 million in third-round funding from a half dozen venture firms. The company's flagship product is server-based software that supports functions such as supply-chain integration, distributor ordering, logistics coordination and inventory

replenishment.

Online Monitoring Services was given \$3.15 million in first-round funding from Piper & Marbury LLP, a Baltimore

tual property.

Two of the five largest network venture deals in the second quarter involved ISPs that cater to business customers

landed \$25 million in funding from HarbourVest Partners.

The \$1.14 billion in second-quarter network investments

### CAPITAL VENTURES

The following Internet and network companies raised the most money from venture capitalists in the second quarter.

Company	Amount	Investment round	Type of business
VIA Internet, Denver	\$51.5 million	Second	International ISP
US Internetworking, Annapolis, Md.	\$33 million	First	Internet communications access
Triton Network Systems, Orlando	\$26 million	Second	Wireless telecommunications
Epoch Networks, Irvine, Calif.	\$25 million	Second	National ISP for businesses
Garden Escape, Austin, Texas	\$20 million	Fourth	Online gardening retailer

All funding amounts listed come from multiple sources, with the exception of Epoch, which was financed by HarbourVest Partners.

SOURCE: PRICEWATERHOUSECOOPERS, SAN JOSE, CALIF.

business law firm. Founded in 1997, Online Monitoring Services sells a product called WebSentry, a search engine that continuously monitors the World Wide Web for pages that misuse a client's intellec-

(see graphic above). International service provider VIA Internet of Denver grabbed \$51.5 million in second-round funding from 10 different venture firms, and Epoch Networks of Irvine, Calif.,

topped the previous mark of \$1.03 billion set in the fourth quarter of 1997.

With \$2.06 billion invested in 377 network companies through the first half of the

See Venture, page 24

## Messaging leadership debated

Lotus and Microsoft tussle over enterprise messaging supremacy.

By Paul McNamara

Microsoft's claim of having achieved supremacy in the enterprise messaging market is premature, according to the author of one study upon which that boast is based.

The claim is also "an insult to customers," says Lotus, whose flagship Notes software has reigned atop the messaging world since long before Exchange was a gleam in Bill Gates' eye.

However, Microsoft does have a case to make.

Preliminary figures from the Electronic Mail & Messaging Systems (EMMS) newsletter survey show Exchange gaining 3.55 million seats in the second quarter vs. 3.1 million for Notes. This is the second consecutive quarterly gain for Exchange over Notes in the

EMMS count, which is based on input from vendors and watched closely by industry experts.

Microsoft was quick to tout these latest numbers as evidence that Exchange has overtaken Notes as the messaging leader.

However, that is an overstatement, cautions Eric Arnum, editor of the EMMS newsletter.

"Congratulations are in order for Microsoft, but I would hate for anyone to think that this is a permanent shift in market leadership," Arnum says. "The results are a sign that these guys will be dogging each other and that every quarter one or the other will be slightly ahead."

In fact, Arnum predicts that Notes will outsell Exchange in the fourth quarter of this year,

presuming Lotus ships Version 5.0 of the product as promised.

In a detailed response posted on its Web site (www.lotus.com), IBM's Cambridge, Mass., subsidiary blasts Microsoft for what it calls a loose accounting of Exchange sales figures.

"For the market and our industry in general, it's not valuable — in fact, it's an insult to customers — for software vendors to make reckless and inaccurate momentum claims," the statement reads.

Microsoft, for its part, remains unbowed by such criticism.

"We've seen incredibly strong momentum behind Exchange Server," says Dave Malcolm, a Microsoft product manager. "Through June 1998, the installed base of Exchange Server has reached 16.6 mil-

See Messaging, page 24

### Get more online:

- Query a survey database or download a spreadsheet with the results.

- Links to venture capital surveys from previous quarters.

www.nwfusion.com





## Venture

Continued from page 23

year, the 1997 record of \$3.64 billion in venture capital invested in 711 companies appears to be in jeopardy.

As has been the case in the past three quarters, start-ups developing wireless communications products and services represented the most popular high-tech investment category in the second quarter.

During the past quarter, 22 wireless firms received funding.

### Internet in the lead

But overall, the Internet continues to dominate network investing.

Sixty percent of the 209 network companies that received venture backing in the second quarter are Internet-oriented.

Some of these, such as BigBook (\$400,000 in bridge financing, which is a supplemental influx of cash between rounds) and online retailer Garden Escape, Inc. of Austin, Texas (\$20 million in fourth-round funding), have built business models around their Web sites.

However, Walden says many venture capitalists are no longer as eager to make big

bets on start-ups whose main source of revenue is derived from drawing large audiences for advertisers.

"Not a lot of those mass providers are making money," he says. "Sure, you have a Yahoo, but there are always exceptions to the rule."

### Niche Investing

The survey indicates that venture capitalists increasingly are financing companies that are targeting narrow customer bases. Among the start-ups aiming at specific audiences are:

- QuestLink Technologies, Inc., of Austin, Texas, which offers Web-based information and products for electronic design engineers.

The company received \$200,000 in bridge funding from Trellis Partners. QuestLink, founded in 1995, runs a Web site ([www.questlink.com](http://www.questlink.com)) from which anyone in the "worldwide design engineering community" can find and order just the right bipolar transistor or microcontroller.

- New York-based Comet Systems, Inc., which was given \$2.5 million in first-

round funding from Prospect Street Ventures. Founded early last year, Comet licenses the Comet Cursor, a development tool that enables Web site designers to customize users' cursors once users visit the site.

- Premier Appraisals, Inc. of Atlanta, which scored \$9 million in second-round funding from Chrysalis Ventures, Moore Capital Management

received a \$2.5 million first round of funding from Brentwood Venture Partners.

Digital IQ sells software to companies that want to run Internet promotions and coupons.

- Plansoft Corp., which sells Internet-based application software to the convention and meeting planning industry.

The company received \$4.7 million in its second round of financing from Patricof & Co. Ventures, Primus Venture Partners and Wasserstein Adelson Ventures. Founded in 1991, Plansoft is based in Twinsburg, Ohio.

The company's Web site offers search engines for meeting facilities, supplies and organizations.

- Neoforma, Inc. of Mountain View, Calif., which runs a business-to-business Web site for the medical industry.

The company landed a \$5 million round of seed financing from Venrock Associates.

Neoforma's site ([www.neoforma.com](http://www.neoforma.com)) provides customers with information on medical products and services from more than 12,000 companies ranging from makers of cardiology equipment to bathroom supply vendors. ■

## 'Net bets

**Of the 209 network companies that received venture financing in the second quarter, 60% are Internet-oriented. Among the most popular categories are:**

Electronic commerce	16%
Intranet software	9%
Internet access	9%
Security	6%
ISP services	6%

SOURCE: PRICEWATERHOUSECOOPERS, SAN JOSE, CALIF.

and several others.

Premier is an electronic commerce company targeting mortgage and home equity lenders.

The company offers appraisals, title searches and flood zone information in the Southeast.

- Digital IQ Corp., based in Saratoga, Calif., which

## 'NET INSIDER

# Examining architectural differences

**T**he architecture of the Internet is different from that of the public telephone network in the same way the architecture of Internet applications can be quite different from that of like applications running over telephony networks. Two examples of such applications come to mind: PBX-based telephony and electronic data interchange.

A traditional PBX consists of a small number of interconnected core systems, only one of which local telephones typically need to connect with. Placing a call involves making a connection from one phone to the PBX and sending a command (a series of digits to select the target of the call) to the PBX, which then connects to the target phone.

In a traditional electronic data exchange (EDI) environment, one customer connects to a server at an EDI service provider, typically over a dial-up or dedicated line, and deposits a specially formatted message on the server addressed to another customer of the same EDI service provider. The message transfer is completed when the other company calls in or initiates contact over a dedicated line.

Both of these examples involve a user connecting to a core server that then controls the transaction with a second user.

This model is considerably different from that used by most Internet-based applications, which tend to be peer-to-peer.

When sending e-mail using the traditional Internet model, an e-mail client on my local computer connects to an e-mail server on the target machine to transfer the message.

This model has been augmented somewhat by the addition of local post office protocol servers at many locations, but even so, the network does not need dedicated servers that act as exchange points. The communication is end-to-end rather than end-to-middle and then middle-to-end.

PBX and EDI services are now moving to the Internet, and vendors are proposing two very different strategies for offering such services. One strategy is to just replace the dial-up and dedicated lines with Internet connections.

In this model all of the communication still goes through a core server. In the case of a PBX-oriented

telephony service, this means that Internet-enabled phones would connect to a PBX server in the local network and request a connection through the server to a target Internet phone.

But there is no requirement to do this over the Internet. An Internet-enabled phone could connect directly to another Internet phone over the 'Net. The only infrastructure components needed besides the network itself are some simple name resolution services.

In some cases, such as with EDI, the central server can perform auditing functions. But even here, if the correspondents trusted each other, no core server would be needed.

I expect to see Internet-oriented PBX telephony and EDI offerings based on central-server and peer-to-peer architectures.

But I anticipate that the peer-to-peer model will, like the distributed architecture of the Internet itself, be the successful long-term model. Those who think they are going to make money running or building core servers for these functions will have a hard time because these people do not understand the Internet's underlying architecture.

Disclaimer: As an aggressively decentralized institution, Harvard rarely encounters the problems of centralized services. But in any case, the above observations are my own.

*Bradner is a consultant with Harvard University's University Information Systems. He can be reached at [sob@harvard.edu](mailto:sob@harvard.edu).*

## Messaging

Continued from page 23

lion users, making Exchange the fastest growing server in PC server history."

Microsoft also points to a survey it commissioned of the 50 largest companies to ascertain which messaging system is the standard within those organizations.

The survey, conducted by the Radicati Group, showed that 26 of the 50 companies have standardized on Exchange, while 12 reported Notes was their primary messaging platform.

Lotus often brags about counting 42 of the largest 50 companies as customers.

"It may be true that Lotus has pockets of Notes in departments, but when you look across the enterprise for the messaging standard, Exchange is there," Malcom says.

One Lotus customer says he does not see all the claims and counterclaims as evidence of an important shift in marketplace dominance. Lotus' top ranking is not at risk, says Alky Poulas, LAN administrator at xpedx, a division of International Paper in Covington, Ky. Notes is "a very mature product that keeps getting better and better," he says. ■



Scott Bradner



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- ☐ H. Transportation/Utilities
- ☐ I. Wholesale/Retail: Non-computer
- ☐ J. Education/Healthcare
- ☐ K. Computer Reseller/Retailer/VAR
- ☐ L. Systems Integration/Consulting
- ☐ M. Other

*NOTE: If you checked K or L, please answer questions 3-4 as if you were employed by your most frequent or typical customer.*

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**3) Please indicate the category that best reflects your primary job function. (check one)**

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- ☐ F. Systems Analyst/Applications Development
- ☐ G. Systems Engineer/Integration

- ☐ H. Other Computer Related
- ☐ I. Executive/Corporate Office
- ☐ J. Financial/Accounting
- ☐ K. Engineering/R&D
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- ☐ P. Other Professional

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- ☐ D. Networks OS
- ☐ E. Groupware/Email Servers
- ☐ F. File/PrintServers
- ☐ G. Application/Database Servers
- ☐ H. Communication/Fax/Terminal Servers
- ☐ I. Bridges/Routers/Gateways
- ☐ J. Remote Access Products
- ☐ K. Network Management Systems/Software
- ☐ L. Network Security
- ☐ M. Network Monitors/Analyzers/Network Test Equipment
- ☐ N. Web Browsers/Search Tools/Engines
- ☐ O. Web Servers
- ☐ P. Web Server Management
- ☐ Q. HTML Authoring Tools/Other Development Tools
- ☐ R. Audio/Video/Multimedia Enabling Tools
- ☐ S. Web Publishing Tools
- ☐ T. Firewall/Security/Encryption Software
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- ☐ V. PBX Systems
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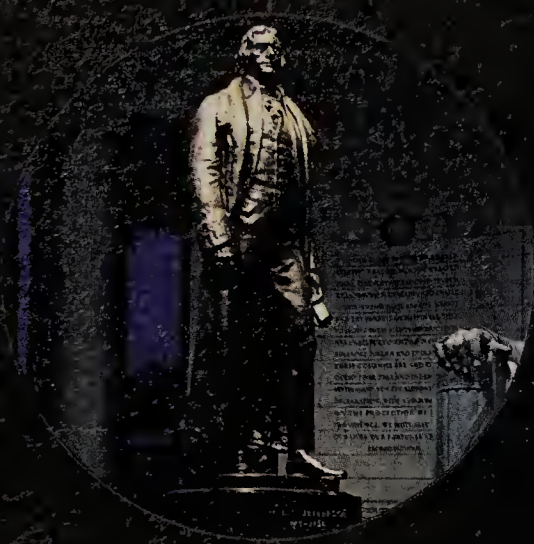


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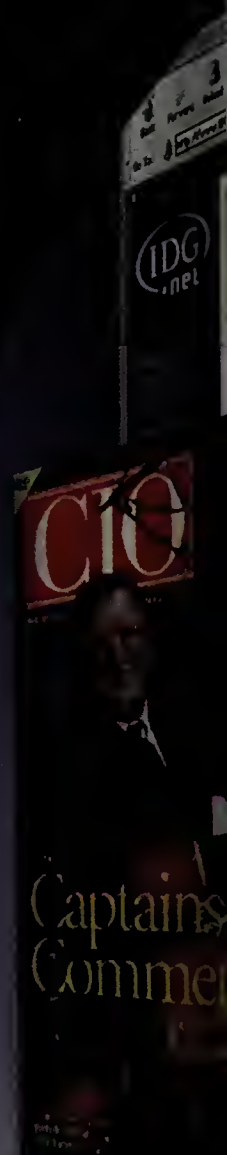


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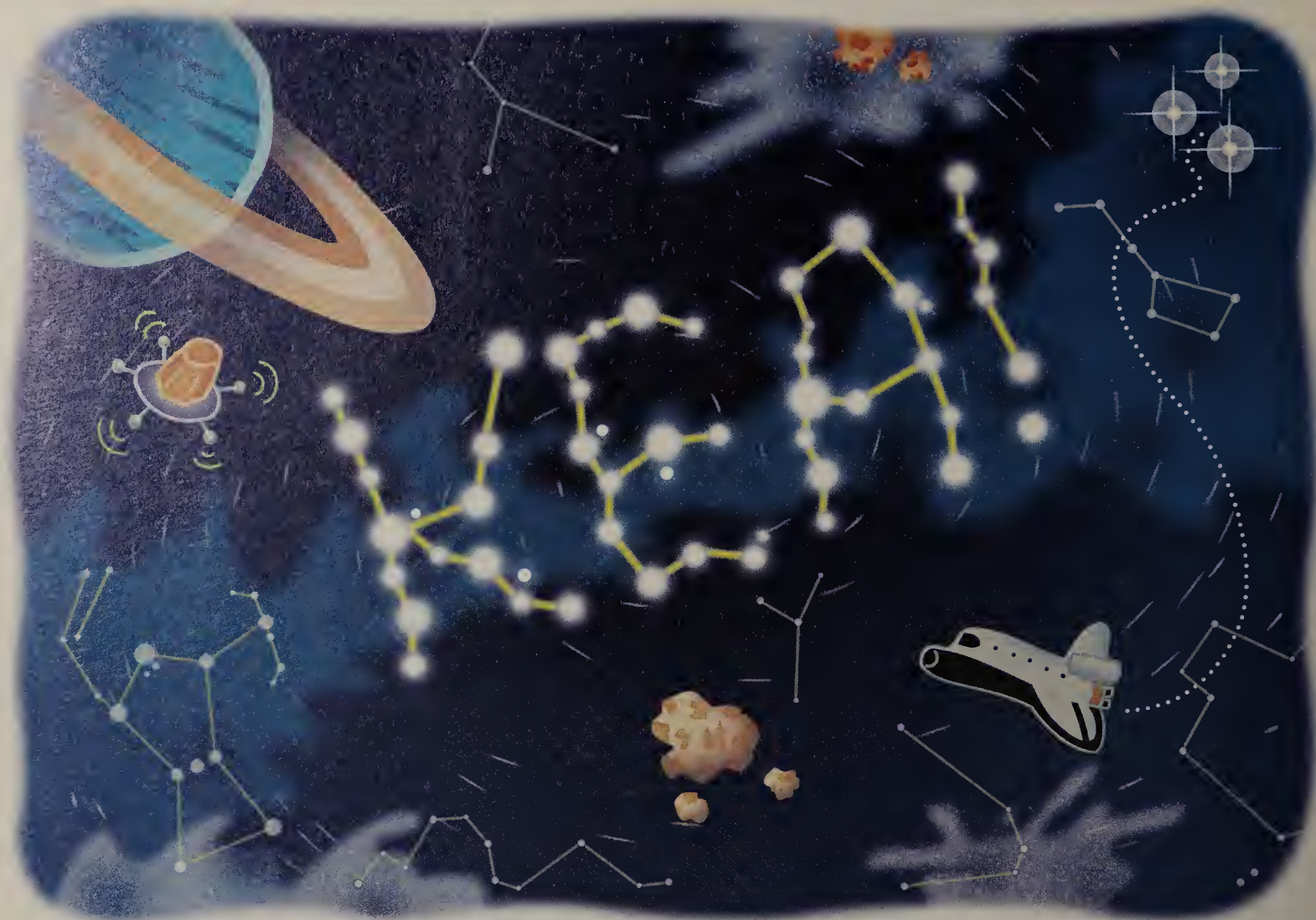
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# intranet

AUGUST 1998

A NETWORK WORLD MONTHLY PULLOUT SUPPLEMENT

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PICK A NEXT-GENERATION  
SEARCH TOOL TO DO THE  
HUNTING FOR YOU.

### ALSO INSIDE

HTML 4.0 unwrapped

A guide to Web server  
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CAPITALIZING ON INTERNET TECHNOLOGIES



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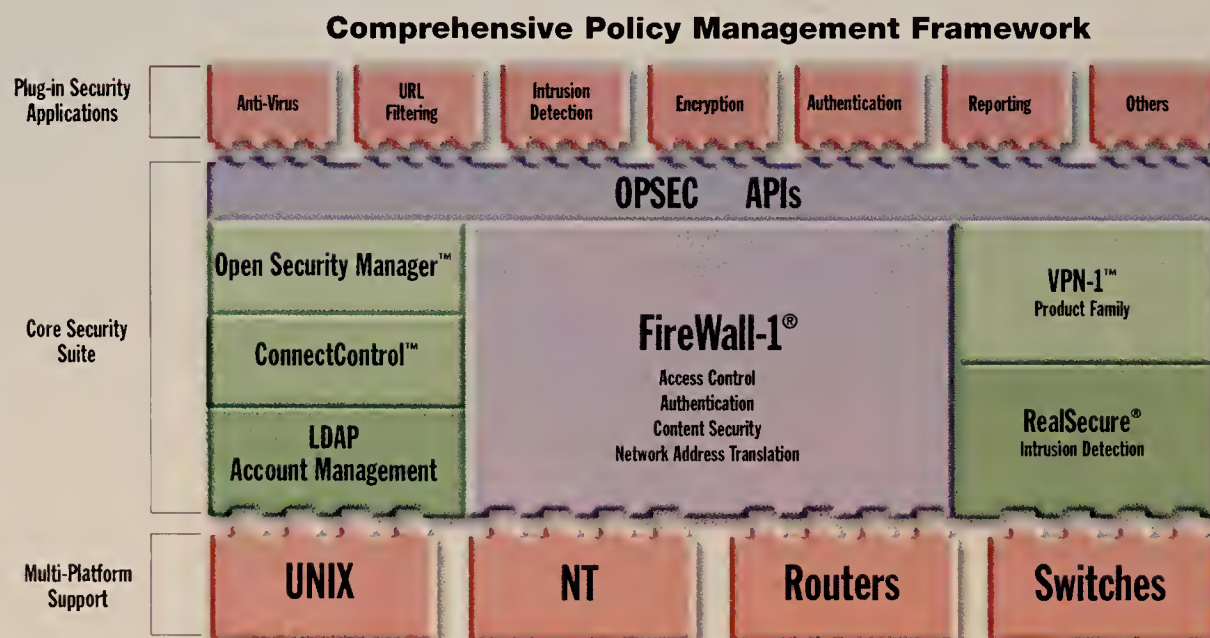
#### Comprehensive policy management.

Because FireWall-1 is tied together with a policy management framework, you can write the policy once, then apply it to everything. This includes plug-in security applications and the FireWall-1 core security suite deployed on hardware and platforms such as UNIX, NT, routers and switches.

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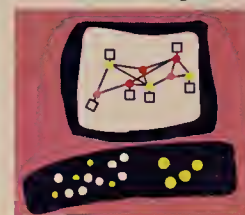
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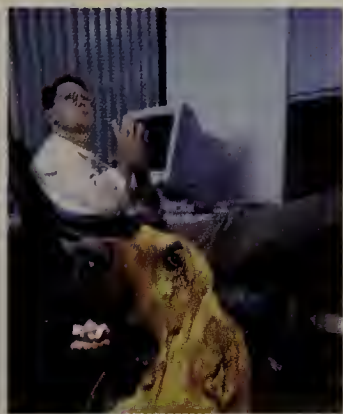
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## FEATURES



Wayne Applehans, manager of knowledge resource strategies at J.D. Edwards, and his hound dog contemplate future intranet search techniques.

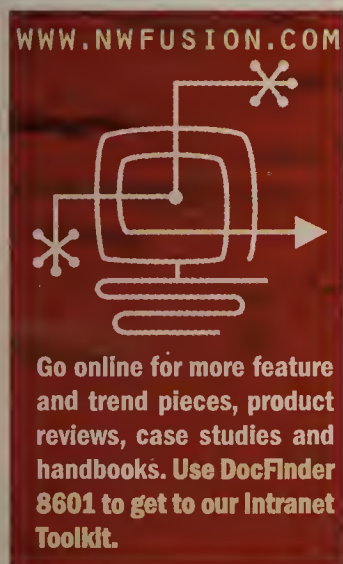
Photo by Patricia Barry Levy

**COVER: LEAVE IT TO THE HOUND.** Next-generation intranet search tools promise to track down information proactively based on predefined user profiles. They'll take the hunt out of hunting, as it were. **13**

**KNOW YOUR AUDIENCE.** In this comparative review, we examine five Web server log analyzers and tell you which are the best at helping you get to the information you need for answering tough questions about intranet use. **7**

**PACIFICARE TAKES THE PLUNGE.** Read how the Web team at this health care provider waded into intranet development with an executive-only site that helped it get the backing for a full company rollout. **9**

**CLEAN UP THIS MESS!** Following our five tips ought to help you get even the untidiest of intranets shipshape. **16**



## DEPARTMENTS

**HOT LINKS.** Your virtual connection to news bits, opinion, insight, humor and other marginalia from planet intranet. **4**

**HANDBOOK: HTML 4.0 UNWRAPPED.** This most recent HTML iteration brings out a host of features sorely lacking in its predecessors. **6**

**ASK DR. INTRANET.** This month, the doctor hands out advice on charge-back policies for intranet use and tips on getting enough bandwidth for intranet and Internet access connections. **18**

**INTRAVERT: TIME TO RETHINK MANAGEMENT.** Columnist Mark Gibbs, a self-proclaimed good manager, discusses the complexity of managing people in this intranet era. **18**

## FROM THE EDITOR

**Y**ou might not think it possible if you could see my office, but I'm usually pretty good at knowing exactly where I've placed that memo or jotted down that e-mail address. I've organized the clutter.

The same holds true for my desktop computer. I've got my directories and subdirectories, folders and documents all sorted out into nice little hierarchical groupings that make zeroing in on a particular item a matter of a few quick mouse clicks.

I expect no less organization from the online resources I use while at work. That means if I'm looking for something in the Network World Fusion article archive, on our intranet or out on the World Wide Web, I expect a targeted search to turn it up. My trust in Internet search engines has floundered, though — there's just so much out there it's hard to have confidence in search results, no matter how high they rank in relevancy.

You don't want disheartened users searching your Web, especially if you're pushing the intranet as the knowledge management hub that will propel the company into the next century as a solid, savvy business. But that's just what's going to happen if employees or business partners have to struggle to find information, particularly information they know is out there somewhere. If your users lose heart, the value of your Web tanks.

That's what makes the advent of the next-generation search technology we discuss in our cover story, beginning on page 13, so exciting. Intranet tool makers are poised to diverge significantly from their Internet counterparts with engines that will really cater to the person doing the search.

The controlled environments of intranets and extranets are perfect outlets for new technologies that tag documents with descriptive labels meant to enable easy location, engage in searches based on user profiles, and create visual maps of search results. In effect, this new technology will take the search out of searching. Enabling that, it seems, should be among every intranet manager's goals.

— BETH SCHULTZ, *executive editor*  
bschultz@nww.com

## PROFILE INTRANET

Judy Ehrenreich heads the inter-departmental Web development team that's making big intranet and extranet splashes at health care provider Pacificare Health Systems. **Page 9.**



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# HOT LINKS

Your virtual connection to news, opinion, insight, humor and other marginalia from planet intranet

## Diffusion rings a bell at GTE unit

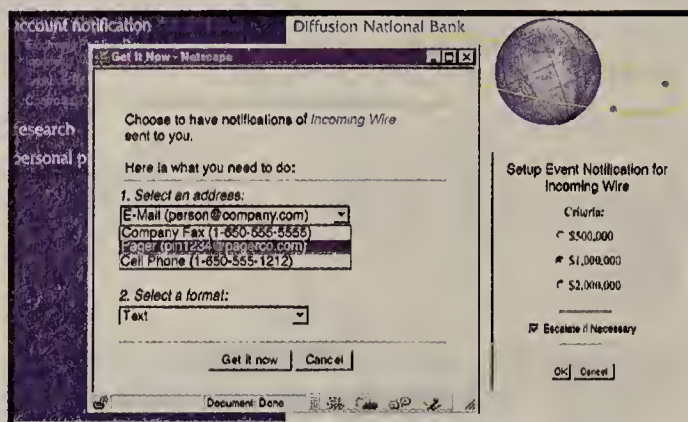
**G**TE Telecommunications Services is building a smarter extranet by plugging in new broadcast technology from start-up Diffusion.

Customers, sales reps and business partners will log in to GTE's Crossroads extranet and indicate what information — ranging from product literature updates and price changes to special reports — they'd like to get and the delivery method with which to receive the information. GTE will use its new Diffusion Server to send material by e-mail, fax, pager or cell phone.

"We knew Diffusion could handle many content formats and could integrate with multiple broadcast methods, and we're going to take full advantage of that," says Heather Diaz, a product manager at GTE in Tampa, Fla.

GTE plans to launch a pilot project this fall with about 300 users. The project will eventually grow to several thousand users.

New in Diffusion Server 3.0, now shipping, are a single logon interface for extranet users and a



DIFFUSION USERS can choose which way they want to get broadcast messages, and change their options at their discretion.

complete audit trail for administrators. The server can scale up to seven processors and support one million broadcasts daily, says Richard Schwartz, chairman at Diffusion in Mountain View, Calif.

Diffusion Server 3.0 costs \$75,000 per processor, plus professional services.

## WHAT VENDORS ARE PROTECTING YOUR INTRANET, EXTRANET?

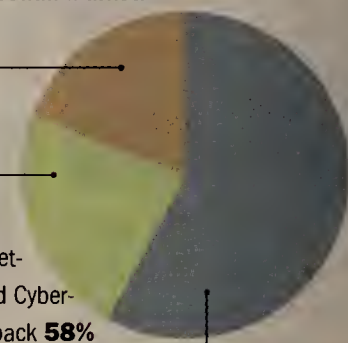
IDC of Framingham, Mass., recently released a report showing that firewall revenue grew a whopping 143% from 1996 to 1997. The market research firm also forecasts the market will reach \$1.8 billion by 2002. It attributes the growing uses of firewalls on intranets, extranets and virtual private networks as strong contributors to the market climb.

### 1997 worldwide firewall market:

Cisco **19%**

Check Point **23%**

Other, with Axent, Network Associates and CyberGuard leading the pack **58%**



## QUOTE UNQUOTE

"A lot of people won't know it's there, but XML will be pervasive. It's just like electricity: You don't stop to think about it when you turn on a light or power up your laptop, but it's there."

— LAUREN WOOD, technical product manager at SoftQuad and chair of the World Wide Web Consortium's Document Object Model Working Group

## Start-up Webridge targets extranet management needs

New company introduces partner, channel management suite.

It's a milestone: Extranets are widespread enough to garner vertical applications.

One of the first, a Web program designed to manage information for partners and distribution, is called Mainspan. It's hardly a shrink-wrapped package, but Mainspan does offer a variety of targeted tools that are of use across industries.

### HOT PRODUCTS



Developed by Webridge of Portland, Ore., the program is a user-configurable collection of object modules. The core components are a product catalog, collateral manager and user manager. Mainspan customizes the view and access for each logon, says Gary Whitney, Webridge vice president of marketing.

Mainspan runs on Windows NT and, because it is a Microsoft BackOffice partner application, integrates with

other server-based programs. There's a lot of room for customization by the user, who enters basic business rules, customer logic, prices and other targeted data. Whitney estimates that Webridge provides 80% of the solution, and users extend the model as appropriate.

Optional and upcoming modules include e-mail and fax broadcast functions, search tools and a slew of vertical extensions including order status, lead tracking, training and other templates.

Pricing for Mainspan starts at \$125,000.

## Designing for dollars

### WEB ART CONTEST BENEFITS CHARITY.

If you've tested your design talents on the corporate intranet and are hungering for broader recognition, you might try

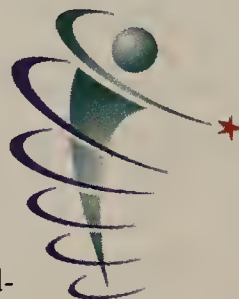
your luck competing in a contest sponsored by a number of high-tech firms.

If you win, you'll get \$5,000, your design will be posted on the World Wide Web for all to see and, best yet, your winning work benefits a children's charity — the Starbright Foundation, which provides resources to seriously ill children.

Starbright, as well as The Computer Museum in Boston, will benefit by receiving funds from entry fees. The children's charity also reaps the benefits of the talented competitors, who design Web pages for the organization in a single day of creative frenzy.

Contestants download a tool kit that includes the site content, then get specific instructions for the design on Nov. 6, the day of the event. In December, judges will name the finalists, whose entries will be shown, critiqued and defended online. Winners will be announced at IDG's Demo '99 conference in February. Entries are still being accepted in the open competition category; a separate masters division is by invitation only for a field of 50.

Go to [www.webmasters98.com](http://www.webmasters98.com) for more information.



## Intranet links

A group of Web developers and users tired of the diverging features and functions of browsers — the once revered universal user interface — have co-

### HOT SITES



Specifically, it's talking about standards such as HTML 4.0, XML 1.0, Cascading Style Sheets (CSS) Versions 1 and 2 and the Document Object Model (DOM).

"HTML, XML, CSS and the DOM are more than just a set of interesting technologies. They are a way of creating Web pages that will enable the twin goals of sophisticated and appropriate presentation and widespread accessibility," the group says.

For more information, link to these sights:

[www.webstandards.org](http://www.webstandards.org)

[www.w3.org](http://www.w3.org)

<http://style.webreview.com/mastergrid.html>



# ATM INTEGRATION

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# INTRANET HANDBOOK

A primer on evolving intranet standards and technology

## HTML 4.0 unwrapped

BY MARK GIBBS

Now in its 4.0 release, HTML has come far from its roots as a quick hack Tim Berners-Lee wrote for use with the World Wide Web he invented back in 1989.

Berners-Lee based HTML on the Standardized General Markup Language, a full-blooded International Standards Organization standard, but his interpretation was rather loose. The World Wide Web Consortium (W3C) ended up adopting HTML, and released the latest iteration in December 1997.

HTML 4.0 builds on Version 3.2, its predecessor, by adding new elements, deprecating some elements and obsoleting a few others (see graphic). The W3C considers deprecated elements as outdated, but vendors must support them for compatibility with earlier products. These elements probably will become obsolete in the future.

### BEST BITS

Among HTML 4.0's highlights is support for sophisticated buttons. The new `<button>` element has a type attribute (submit, reset or button) and its content may be an image. For example, the following specification creates a button with text overlaying an image: `<button type=button>Connect</button>`.

Prior to HTML 4.0, browsers interpreted table-caption alignment with wild abandon. Now the align attribute for the position of table captions defines values of top, bottom, left and right. There's also support for building table cells from right to left for languages written that way.

The new `<thead>`, `<tfoot>` and `<tbody>` elements enable grouping of table contents. Each table can only have one header and one footer section but multiple body sections, making it easy to structure table contents. For example, you can apply alignment attributes to sections so that all rows within a section are targeted.

Similarly, the new `<colgroup>` element supports grouping of columns. Again, alignment attributes apply to all columns within a group.

Forms acquire grouping with the `<fieldset>` element. As with the table row and column grouping functions, `<fieldset>` alignment attributes apply to all fields in the group. You can name fieldsets with the `<legend>` element, which has an alignment attribute for controlling

where the label appears relative to the fieldset.

An addition to form elements is the "taborder" attribute. This attribute is for controlling the tabbing order of the fields. All fields with a tab order of one or higher are followed in sequence; fields without a specified tab order or a tab order of zero are followed in the order that they appear in the HTML code.

Tabbing makes keyboard access for controlling the user interface accelerator keys easier. For example, you can associate Alt R with a reset button by using this code: `<button accesskey="R" type= reset> Reset</button>`.

data should be rendered by an external program or within the document by an author-specified application. In general, the object element requires three specifications: the implementation of the included object (the location of executable code), the data to be rendered and additional values required by the object at run-time (such as initial values for parameters).

One of the powerful object features is the ability to specify alternate renderings. You could write code, specifying, for example, that an applet written in the Python language be used and failing that, then an MPEG video, a GIF image and, finally, a plain text rendition.

### FUTURE CONTENT

What does HTML 4.0 mean to intranet and extranet managers?

The standard will go a long way toward stopping

### WHAT'S IN, WHAT'S OUT

HTML 4.0 not only adds features not found in its predecessor, it gets rid of others.

#### New features

- Support for Cascading Style Sheets
- Ability to build keyboard shortcuts into page controls
- Support for read-only documents for copyright-protected text
- In-line frames
- Enhanced tables
- Support for objects and scripts
- More versatile buttons
- Support for non-English speaking users and for users with disabilities

#### Deprecated elements

- `<applet>`, replaced by `<object>`
- `<center>`, now handled by style sheet properties
- `<basefont>`
- `<font>`
- `<dir>`, now handled by `<ul>` with styles applied
- `<menu>`
- `<isindex>`, superseded by forms
- `<s>`, replaced by the text-decoration style sheet property
- `<strike>`
- `<u>`

#### Obsoleted elements

- `<listing>`, now handled by style sheet properties
- `<plaintext>`
- `<xmp>`

Accelerator keys apply to the `<a>`, `<area>`, `<button>`, `<input>`, `<label>`, `<legend>` and `<textarea>` elements. However, HTML 4.0 doesn't define how the user will be alerted that an accelerator key exists. That's left to the browser vendor.

HTML 4.0 also spruces up event-handling capabilities. Under this version, almost any element can respond to a set of element event handlers. The events now recognized are:

- `<onclick>`: mouse button clicked.
- `<ondblclick>`: mouse button double-clicked.
- `<onkeydown>`: key depressed.
- `<onkeypress>`: key pressed and released.
- `<onkeyup>`: key released.
- `<onmousedown>`: mouse button depressed.
- `<onmousemove>`: mouse moved within the element.
- `<onmouseout>`: mouse moved out of the element.
- `<onmouseover>`: mouse moved into an element.
- `<onmouseup>`: mouse button released.

These events would typically be associated with JavaScript code.

Lastly, HTML 4.0 introduces the `<object>` element. This `<applet>` replacement offers a generic way of specifying images (rather than using the `<img>` element) and in-line frame specification (the `<iframe>` element).

The `<object>` element allows control of whether

the explosion of proprietary HTML extensions, but it doesn't make much impact resolving compatibility issues between the Microsoft and Netscape implementations of "dynamic" HTML. This is because each browser handles the Document Object Model (DOM), the document architecture the W3C is working on, differently.

The DOM defines standard interfaces between browser events, style sheets and scripts. HTML 4.0 will supplement the DOM, but that's about as far as the specification is expected to go.

In April, participants at a W3C HTML workshop decided that extending HTML would be difficult. Instead, they propose starting fresh with the next-generation HTML by using a suite of Extensible Markup Language (XML) tag sets. In effect, they espouse creating a modularized HTML. Their view is that modularized HTML will be more manageable and easier to integrate with other XML tag sets.

But never fear. The reality for intranets and extranets is that the stability of existing HTML content is assured for years to come — browser vendors will always make their new versions backwards-compatible. Most browser and authoring tool vendors won't support the full HTML 4.0 feature set until the end of 1998 at the earliest, but you might want to start polishing existing content and ensuring that new content is HTML 4.0-compatible anyway.

When you begin doing so, check out the W3C's validation service as a handy reference point. •

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**Go online for more information on HTML 4.0, including:**

- The specification.
- The W3C's validation service.
- An analysis of browser support.

**DocFinder: 8603**







Most analyzers discard data to save space and increase performance. For example, it's common for an analyzer to throw out image records, such as GIF and JPEG files, because they add little information to reports. This capability can result in immense savings — in our sample log file, more than one million of the 1.3 million hits were for graphics.

### THE SCOOP

Product	Hit List	net.Analysis	Web-Trends	NetIntellect	Site Server
Built-in reports (25%)	8	9	8	6	6
Customizable reports (10%)	8	8	5	7	8
Performance, first report (20%)	9	6	9	5	5
Performance, add'l report (10%)	9	6	5	9	8
Additional features (10%)	6	8	8	6	9
Platform support (10%)	6	8	6	6	5
Documentation, online help (10%)	5	8	6	6	5
Installation (5%)	9	7	9	9	3
Overall score	7.65	7.6	7.25	6.35	6.3

\* Individual category scores are based on a scale of 1 to 10. Percentages are the weight given each category in determining the total score.

But be warned: With some analyzers, you can't retrieve data that you've thrown out without sorting through the entire log file again. When we asked WebTrends for a second report on the same data, the program took nearly an hour to come up with the results. NetIntellect and Hit List, however, were able to generate a second report in just seconds. Neither Site Server nor net.Analysis requires a full database reload, but each software package still took several hours to complete the second reports we requested.

If you plan simply to run one report over and over again, either storage approach will work, and you should look for the fastest product. If you want lots of reports, you need to consider both analysis and reporting times. If you plan to run a variety of reports on the same data, consider Hit List, which delivered the fastest overall response time. We suggest avoiding NetIntellect and Site Server for performance reasons, unless your log files are tiny or your log analyzer workstation is very fast.

### RUNNING REPORTS

Most useful to Webmasters and network managers are the programs' stock reports, which include most requested pages, least requested pages, popular starting and ending pages for each visitor and load statistics over time. Every analyzer offers these basic reports, but all are not equal. We found some significant differences — and some sloppy programming.

For example, no two analyzers agreed on the mix of Web browsers and operating systems, and some reports were wildly inaccurate. Hit List filed all Internet Explorer browsers as "Netscape 4.X." On the other hand, Hit List was the only analyzer that let us easily fix this bug once we discovered it.

All the Web server log analyzers spend a great deal of time providing information about the geographic location of Web site visitors. While this feature isn't a major selling point for developers of access-controlled intranets and extranets, it's worth noting — particularly because the results are less than reliable.

In our sample, approximately 35% of the log file entries were numeric, meaning that no organizational information was associated with them in the Internet's Domain Name System. Another 20% of the entries came from AOL's proxy servers. This means that 55% of the log entries could not be tracked to any geographic location.

Yet all of the log analyzers were perfectly comfortable drawing pie charts that divided site visitors among the U.S., Canada, Australia and Japan, for example.

What's most alarming is that none of the vendors adequately warn users about how misleading and incorrect this information can be. The worst offender in this case is Hit List, which in our test not only didn't point out that more than one-third of the data had to be discarded, but also labeled graphs to say that all users with ".com" at the end of their domain name — including the 20% that came from AOL proxy servers — were in the U.S.

NetIntellect, Site Server and Web-Trends also miserably failed this test, providing deceptive statistics as well as poor and misleading interpretations of the geographic and organizational information available.

### LOG TWISTS

Beyond the basics, each analyzer focuses its efforts in different areas. NetIntellect, for example, lets you create many different versions of the same reports by filtering data in various ways, rearranging fields and changing the way that graphs appear. Hit List takes things even further with a report writer tool that's highly sophisticated — more sophisticated, in fact, than most Webmasters have the time or patience to learn.

WebTrends doesn't have the same flexibility as NetIntellect or Hit List, but it offers the most useful and interesting set of reports in its complete package, including such cool queries as most popular search engines, search strings and Web crawlers.

The king of the report family is undoubtedly net.Analysis. Although many of the analyzer's 180-plus standard reports are small variations of each other ("page views per day for the current month" vs. "page views per day for the previous month"), net.Analysis offers some things that no other analyzer does.

For example, you can request a clickstream analysis, which determines the precise page sequences accessed most often by users. However, these reports are so costly to generate that they may be of little use to most companies. What's more, we abandoned our efforts to generate a full set of clickstream reports after our analysis workstation had worked on them for six hours and still wasn't finished.

### VIEWING THE RESULTS

Once the reports you requested are generated — probably automatically via a scheduled event — the log analyzers deliver them to a location and in the format of your choice. They can put reports in HTML format on your Web server, save them as local Microsoft Word files or mail them to users. Hit List, net.Analysis and WebTrends also

can create reports as plain text.

Some packages allow you to generate reports remotely. Hit List and WebTrends have fairly simple procedures for remote report generation, while net.Analysis has a massive Web-based report generation and management facility. In fact, net.Analysis reports are more naturally managed and viewed through their built-in Web server than through any other mechanism. Net.Analysis can generate reports for specific users, authenticate users for access and automatically clean up old reports. Net.Analysis has an elegant interface, which helps if you have lots of users looking at many different reports.

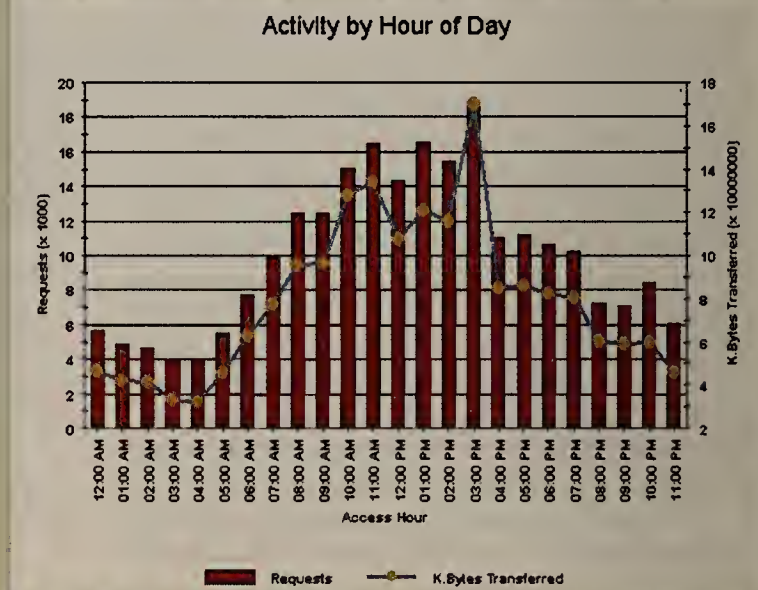
### CHOOSING A PRODUCT

Which analyzer is right for you depends most on how many reports you're generating and how you're distributing them. If you need to create dozens of reports for a corporation full of departments, consider net.Analysis, but be aware that it's expensive, slow and fairly fragile. Plan on using a high-end workstation to keep net.Analysis running in anything approximating real time.

For most companies, Hit List and WebTrends are excellent choices. Hit List is more flexible and a practical necessity if you have to generate many different reports with many different criteria. But while you get these useful drill-down features, you sacrifice some reports that the product doesn't provide, such as search engine query strings.

WebTrends offers a better set of reports with

### NETINTELLECT 3.0.2



WEB LOG ANALYZERS allow Webmasters to visualize site traffic by the hour. NetIntellect tabulates the number of requests as well as the amount of data transferred and combines the two queries in a single graph.

more interesting information out of the box. If you want to set up your analyzer and let it run, and if you don't plan to try and finesse every graph, WebTrends gives you lots of great information quickly and easily. And for only \$200 more than the standard version, WebTrends Professional adds management features such as content analysis and link checking.

NetIntellect and Site Server did respectable jobs of generating reports, but because of their snail-like pace when handling the log file we threw at them, we wouldn't put them in our top tier.

*Snyder, a member of the Network World Test Alliance, is a senior partner at Opus One in Tucson, Ariz., where he specializes in networks and communication systems. He can be reached at jms@opus1.com.*





# PacifiCare takes the plunge

THE WEB TEAM AT THIS HEALTH CARE SERVICES FIRM MAKES A BIG SPLASH STARTING WITH AN EXECUTIVE-ONLY SITE. BY PEGGY WATT

**P**acifiCare Health Systems saw an ocean of opportunity in Web technology, but the company wanted to test the waters before jumping in headfirst.

So executives at the Santa Ana, Calif., firm dipped their toes into the tides last summer by testing an intranet, called Compass, developed for their use. For six months, they learned about Web tools by using the site.

Compass provides easy access to proprietary records such as sales figures and budgets. Executives can view reports in various formats and import them into spreadsheet applications. The site also includes business news feeds, live stock data and frequently accessed industry resources.

"Compass is our way of providing a secured, internal net that recognizes the need to share information with a broad selection of individuals," says Jim Williams, PacifiCare senior vice president and chief information officer. Previously, managers shared such material on a more limited basis and much more slowly.

Judy Ehrenreich, who supervises intranet design and content as head of an interdepartmental Web development team, worked with PacifiCare's executives to train them in the use and value of an intranet, as well as to solicit their support. "I knew we couldn't succeed without it," she says.

Regardless of their previous exposure to computers, the executives generally liked their experiences with Compass. And so they approved plans for an employee intranet and an extranet, as well as a general network overhaul.

## SEA CHANGES

The technology decisions came together at a time of change for PacifiCare. In February 1997, the company acquired a competitor, Foundation Health Plan (FHP),



PACIFICARE'S WEB DEVELOPMENT TEAM encourages employees to surf like mad. Team members include (from left to right): Jim Williams, Gail Navarette, Randy Jackson, Judy Ehrenreich, Damon Lovett and Cherie Ciotti-Roco.

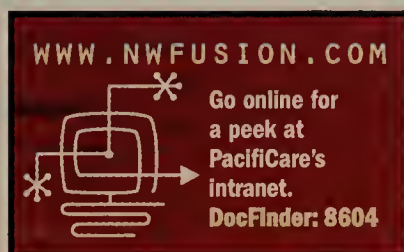
which was almost equal to PacifiCare's size. The resulting combination is a \$10 billion firm with operations in 14 states and Guam. PacifiCare had been planning to revamp its network when the merger occurred; development of the intranet, called Planet, and the challenge of doubling in size simply made the change more dramatic. "The former FHP had to get to the same technological baseline in order to launch both parts of the company to the next step," says Ehrenreich, who is also vice presi-

dent of human resources operations.

It all came together early this spring. IS laid the new network plumbing; Ehrenreich's team prepared to populate the internal Web; and the applications development team produced a framework of pages (see sidebar, page 12).

With executives backing the project, PacifiCare's intranet grew with vigor. "That lead time with Compass really helped grease the skids for building Planet," Ehrenreich says.

To populate Planet, Ehrenreich assembled a cross-functional team of 15 users representing each major PacifiCare department and holds









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[REDACTED]

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weekly meetings to determine protocol, rules, content and appearance. They use Microsoft FrontPage and Windows Notepad to design pages, and share templates with users who want to post content.

The pages use similar designs but have department- or region-specific color schemes.

Part of the team's role is to encourage participation, and new sites pop up regularly.

### HR'S ODYSSEY

The HR site, called Odyssey, is extensive because the company's numerous regions have different services. But the resulting effort is comprehensive.

Odyssey includes sections on benefits, a reference library and general employee information such as training programs. Online forms are a big HR effort: Using Odyssey, employees can fill out time cards, submit performance appraisals, change personnel information and register for benefits.

"We're moving to a very self-servicing environment," says Damon Lovett, HR information services analyst and a team member representing HR.

For now, employees forward online forms as Microsoft Outlook e-mail attachments. This provides an audit trail, but the HR team plans to migrate to a formal workflow system with the e-

### THE FAST LAN WAVE

**PacifiCare standardized on 3Com products for the Fast Ethernet infrastructure it's building for the intranet. Here's a breakdown:**

- CoreBuilder 5000 switches operate on an FDDI backbone.
- 100M-bit/sec connections link the backbone switches to SuperStack II Switch 3000 switches.
- SuperStack II Switch 1000 switches provide switched Ethernet desktop links.
- Four AccessBuilder 9600 ATM multiservices devices link two California sites.
- Remote LANs use CoreBuilder 2500 Ethernet/FDDI switches and SuperStack Hub 10s.
- NetBuilder II and SuperStack II NetBuilder routers provide WAN routing from the remote sites.
- Net managers use Transcend Enterprise Manager to monitor, configure and manage the equipment.

mail and PeopleSoft personnel management software.

Because employees are also PacifiCare health insurance customers, they make ideal beta testers for applications that the company will eventually market.

One such example is for an extranet application. HR staffers have created a knowledge base using the Health Care Encyclopedia published by HealthWise in Boise, Idaho. Users search health care topics for preventative information, referrals and other resources.

The Health Care Encyclopedia comprises 70M bytes of data, mostly in

15,000 static but searchable HTML files, and is updated quarterly, says Randy Jackson, an IS staff member who is a liaison to the intranet content team. PacifiCare plans to offer the knowledge base not only to its member customers but also to employee groups whose employers subscribe to PacifiCare. "We used to give out these huge paperbound books that were almost immediately out-of-date, so this is a great thing to provide online," Jackson says.

### SWELLING TIDES

While the content team designed pages, IS cranked along behind the scenes so the structure

and tools would be ready when the sites were done.

"We needed a scalable, cost-effective network to handle mission-critical, bandwidth-intensive applications," says Rick Garcia, PacifiCare's PC network operations manager.

At its California sites, PacifiCare installed redundant switched Ethernet LANs and standardized on 3Com net gear to deliver traffic to desktops (see graphic). Most employees access Planet using Microsoft's Internet Explorer browsers running on Windows 95 or NT Workstation Pentium PCs. The PCs are typically replacing X terminals.

The next major job is Web-enabling legacy data resources — warehouses full of company data and databases with general industry and governmental information. Already the company's Web site, [www.pacificare.com](http://www.pacificare.com), is the

gateway to an extranet. Different levels of access are available to individual customers, corporate customers (such as an HR representative or health plan coordinator), health care providers and brokers.

Applications in development will let sales reps and customers determine eligibility standards for benefits. Customers will be able to change their policies online. The legacy data is protected by a firewall, and users will need passwords and Secure Sockets Layer security for access.

Web applications are operated at the data center on an application relay server, a Digital Alpha server running Windows NT. It is separate from the intranet's Microsoft Internet Information Server — to allow another layer of security, Jackson says.

Part of the IS mission is to see if an application is useful to multiple departments so redundant development can be avoided, Jackson says. For example, the online-eligibility program uses the same back end as the older interactive-voice-response program that provides much of the same information.

To Jackson, the multilevel Web project is dramatically expansive. He points to the fact that when he and Webmaster Jeff Dailey designed PacifiCare's World Wide Web site in 1995, only about 30 employees had browsers. Now he estimates that 9,000 PacifiCare employees are browsing. "It's been a long road," he says.

Ehrenreich pictures the project rather as a continuing stream. "The intranet will be a living, evolving tool," she says. "It will never be done." •



"THE INTRANET project started as a murmur and grew into a real roar," says Jim Williams, PacifiCare CIO.

## Intranet apps ride wave of acceptance

PacifiCare's primary Planet-builders say the intranet was swept into the company by a receptive tide.

The first ripples were the simple Web pages that Cherie Ciotti-Roco, intranet project leader, and others on the application development team crafted in their spare time. Ciotti-Roco, with Gail Navarette, an intranet project developer, and graphics consultant Maria Angeloni, spent a weekend mapping out Planet. They hosted the first site last October, on a spare server underneath Ciotti-Roco's desk.

As PacifiCare employees learned to use browser-equipped systems, the company's text-based default interface, called InfoCare, started to look even older than its eight years. InfoCare was a 3270 application but employees with PCs could use emulation mode to access its VAX-based e-mail and databases.

Planet caught on with its clever graphics; easily navigable satellites to early, basic departmental sites; and intuitive access. More than 80% of employees were accessing some part of the intranet by its formal launch in March, Ciotti-Roco says.

The IS department shut down InfoCare in May.

Now, PacifiCare's application development staff has a decided Web orientation. Most new application development is for the Web, and existing applications get more manageable browser interfaces, Ciotti-Roco says.

For example, an online reference manual is scheduled to debut early next month. PacifiCare's member services staff now relies on stacks of reference resources to answer questions from health service members about benefits, procedures and policies. The few online resources are accessible by logging on to a half-dozen emulation screens that draw data — slowly — from several legacy systems. Training takes several weeks.

Planet team members obtained electronic copies of many of the paper references and put them online. They built SQL databases to front end the legacy systems, and users can browse the reference sources simultaneously in different windows — the intranet supports six



**PACIFICARE APPLICATION DEVELOPERS**  
Gail Navarette (left) and Cherie Ciotti-Roco have 99 intranet projects on their wish lists.

transactions per second for 500 users. Training should take only a day.

The applications development team works with Judy Ehrenreich, vice president of human resources operations, and her committee of intranet content masters, to help departments prepare Web sites. They developed a toolbox of templates, clip art, fonts and other resources. New departmental sites appear at the rate of about two per week.

— Peggy Watt



# Leave it to THE HOUND

INTRANET MANAGERS AWAIT NEXT-GENERATION SEARCH TOOLS THAT WILL HUNT FOR INFORMATION BASED ON PREDEFINED USER PROFILES. BY SANDRA GITTLEN

Imagine logging on to your computer and being welcomed with this message: "Good morning. Here are the briefs on your competitors I gathered for you last night."

As futuristic as this scenario might seem, it could soon be possible. Where Internet search engine vendors have faltered in creating true personalized and refined search results, intranet search tool makers are on the cusp of major breakthroughs that would enable just that.

Many intranet managers anxiously await the possibility. "Search technology will evolve into a middleware tool that becomes part of an arsenal for gathering information. It will take people out of hunt mode," says Wayne Applehans, manager of the knowledge resource strategies group at J.D. Edwards, in Denver.

Search vendors targeting the Internet have all they can handle just trying to ensure their software can deal with the World Wide Web's wild growth, says Ron Weissman, vice president of worldwide marketing for Verity in Sunnyvale, Calif. "There are 130 million Web sites on the Internet, and that number is going to grow to 1.3 billion in the next few years. It's hard to create search technology to [keep up] with that," he says.

Meanwhile, intranets, because of their controlled environment, are perfect for the new technologies that tag documents with descriptive labels, engage in searches based on user profiles and create visual maps of search results.

Capabilities such as these will go a long way toward making it easier to get information out of intranets. Intranet searching today often takes place on a piecemeal basis, as Forrester Research discovered in a survey of 50 Fortune 1,000 companies. More than 60% of the survey respondents said they can only perform searches on individual servers and not across the enterprise.

Forrester, in Cambridge, Mass., says that only 32% of intranets are completely searchable. The firm is not alone in its belief that the way to turn



WAYNE APPLEHANS, manager of the knowledge resource strategies group at J.D. Edwards, knows that, like a good hound dog, next-generation intranet search tools will track down precisely what a user hunting for information needs.



these numbers around is to create search tools that work in tandem with knowledge management.

J.D. Edwards, for example, is embracing that principle. The supply chain software maker is finalizing the rollout of the Knowledge Garden 2.0, an intranet that will serve more than 8,200 employees, partners and customers. One of the most advanced features of the Knowledge Garden will be an extensive search tool, Applehans says.

#### GARDEN OF EDEN?

To compile J.D. Edwards' search database, Applehans and his team created profiles of the company's 4,200 employees. These profiles included name, job title and job needs, such as information on competitors and clients.

Employees ranked the value of the information, and Applehans' team categorized the data based on that criteria. "Buying a million-dollar search engine doesn't help if you don't organize people around the information," Applehans says.

The team used Microsoft's Site Server 3.0, which includes a tool that lets you create a site vocabulary and then allows you to automatically mark those words within documents using meta tags. Intranet managers create query forms for users to check off which resources, such as file or Web servers, they want searched, Applehans says.

Site Server 3.0 allows searches of Office documents, Web pages, Active Server Pages (ASP) and text files. Upcoming versions of SQL Server and NT will feature built-in, full-text search.

"The object is to make sure that everything within the enterprise is searchable," says Mike Tuchen, Microsoft's group program manager for Site Server. "You also have to make sure that a search user interface is built into everything."

At J.D. Edwards, departmental knowledge authors insert meta tags in documents and then build an abstract on each document for their groups. Pull-down menus within Site Server help this task so only the meta tags that apply to a knowledge author's department appear, Applehans says.

A knowledge resource analyst validates the information submitted by the knowledge author and then checks the document into the Knowledge Garden database.

Applehans says upcoming versions of the Knowledge Garden might fea-

#### THE COST OF SEARCH

Here's a breakdown of what you'll need to jump-start search on your intranet, assuming 20,000 users, 20 business units and 500,000 intranet pages.

<b>Software</b>	<b>\$150,000</b>
■ Web-based text search	
■ Extensions to include content from selected network file servers and Notes databases	
<b>Server platform</b>	<b>\$14,000</b>
■ Dual Pentium II with 256M bytes of RAM, 16G-byte RAID disk	
<b>Installation and initial deployment (three worker months)</b>	<b>\$30,000</b>
■ Performance tuning	
■ Graphic page design	
■ Link creation and promotion	
<b>One-year maintenance (four worker months)</b>	<b>\$40,000</b>
■ Technical maintenance	
■ Home page content updates	
■ Package and promote high value (queries of the month)	
<b>Setup and one-year operation</b>	<b>\$234,000</b>

SOURCE: FORRESTER RESEARCH

ture the Extensible Markup Language (XML), a new World Wide Web Consortium standard for tagging Web content. The standard lets users create fields that name data; search engines use those fields to create more accurate return lists.

#### THE RIGHT PRESCRIPTION

There's a tremendous coalition around XML, but Verity's Weissman

says the standard is about two to three years away from becoming the next big thing in intranet searching.

However, intranet managers who want XML now don't have to wait. Start-up Centraal for example, offers an XML search tool for the Internet that companies can use internally as a browser plug-in.

Centraal's technology, called Real Name System (RNS), allows companies to attach keywords to URLs so that typing in a simple word, not the whole name string, produces a document. For instance, instead of typing in "www.nwfusion.com," a user could simply program his search tool to look for "Fusion." Because the page has been tagged with that name, the search tool will link directly to it, explains Keith Teare, president and CEO of the Palo Alto, Calif., company.

Centraal plans on bolstering RNS with a centralized management feature, Teare says. Currently, users have to install the product as well as the predefined lists at their desktops. This means someone has to walk each addition or deletion to the list to every computer.

Walgreens, the nationwide pharmacy chain headquartered in Deerfield, Ill., hopes to have XML up and running within 12 months, says Pete Van Valin, team lead on Web systems at the company.

Van Valin has been trying to make

Walgreens employees understand the importance of placing meta tags in their HTML documents, and says he's looking forward to automating the process with XML. He's still evaluating tools, however, so he doesn't have specific plans.

Trying to get hold of all the information generated from the intranet's 10,000 users would be impossible without tagging, Van Valin says. His team has created a list of standards and best practices for intranet documents but has not done formal training on tagging yet.

"Tagging is all about precision. When that precision happens, it's ideal," Microsoft's Tuchen says.

Microsoft recently announced support for the XML standard and is implementing support for the standard in products such as its Internet Explorer 4.0 browser.

#### DOING THE MATH

While vendors such as Centraal favor XML-based keyword lists, other search tool makers shy away from them.

San Francisco-based Autonomy, for example, opts for Bayesian logic to track word patterns in documents. Thomas Bayes, the 18th century minister and mathematician, examined the relationship between multiple variables and determined the extent to which one variable

## How to track down a good search tool

Danny Sullivan, editor of the Search Engine Watch Web site, says intranet managers should consider the following questions when choosing a search engine.

### 1 How complex is your intranet?

If you have one server in your organization and everyone uses that server, then you don't need much in the way of a search tool. But if you have 20 different servers and you need to search them all, you'll need an advanced search tool from a company such as Verity, Sullivan says.

### 2 What administrative tools are available?

Free tools are great if you know how to program, but if you need an out-of-the-box program, you're going to have to pay for it. "If you're in an overworked IT department, you may want a WYSIWYG product. But sometimes even those can be complicated. A \$5,000 search package can sometimes make you feel overwhelmed," Sullivan says.

### 3 What file types are in use?

Figure out what file types, such as Portable Document Format, Rich Text Format and spreadsheets, employees use. "The free and lower cost systems may only index ASCII and HTML files," Sullivan notes.

### 4 Can the search tool do filtered field searching?

You may be indexing documents that aren't HTML and, therefore, will need a search engine that can read fields or meta tags. For instance, if you want to search for data based on date, you have to be able to narrow down the fields. If you foresee using XML, you'll want to include that in your analysis, as well, Sullivan says.

### 5 Is the tool scalable?

It's not only documents that take up room — search indexes can be space mongers, too. "They can sometimes take up as much space as what you're searching," Sullivan adds.

The amount of documents the search engine can index is only part of the equation. For instance, if you want to index based on word positioning, that may take up more room than regular indexing.

"You need a tool that is going to grow with your needs," he adds.

— Sandra Gittlen






affects the other. Applied to search, this means that rather than searching for individual words, Autonomy's engine examines patterns of words within documents, marking their occurrence together.

For instance, if a user wants to search for information on Microsoft's Wolfpack, he won't receive information about wolves in the wild. Because of the user's marked pattern, Autonomy's Agentware system will know that this request is dealing with software and Microsoft.

Other companies are turning to visualization to help users understand their search options. Start-up Semio, for example, offers a search tool that indexes text, creates clusters of content and then generates visual maps of those clusters for search results.

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If a user searches on "NT," SemioMap 2.0 will display the returns that directly pertain to that result, and then map out related concepts such as Windows, Microsoft and operating systems. This gives users a sense of the hierarchy of their searches.

#### SEARCH NO MORE

Searching as a stand-alone tool will eventually become obsolete, J.D. Edwards' Applehans says. Instead, search will be embedded into other systems as is planned for NT 5.0 and Lotus Notes 5.0. Rather than having people spend time tracking down information, next-generation search tools will proactively and transparently gather information for users based on predefined profiles and job titles, he says.

Applehans says four things are necessary in future search tools:

- They'll have to become more user-friendly and simplify search. (Boolean searches alone will no longer be acceptable.)
- They'll have to gather and process external information as well as they gather internal data.
- Embedded agents will have to analyze search paths and offer other ways to find information. They'll also have to study data-gathering behavior, store that information and be able to build suggested query lists based on that information.
- They'll have to incorporate standards such as XML.

Arriving at such a searchable universe is going to cost, of course.

According to Forrester, implementing a full-blown search tool

installation for a 20,000-person company would cost about \$234,000. That figure takes into account software, servers, initial deployment design and one-year maintenance (see graphic, page 14).

And that could be peanuts compared to the cost of implementing a knowledge management system from a company such as Verity. Such an installation would tally from \$300,000 to \$1.2 million, not

including the salaries of the people who will be ensuring that information is properly tagged and summarized, Forrester says.

For its part, J.D. Edwards spent slightly more than \$600,000 to build Knowledge Garden. That figure includes the cost of software, hardware, maintenance, personnel, consulting and training, Applehans says.

J.D. Edwards expects a big payoff. The company estimates that it will

save about \$4 million annually by enabling employees and others to search for information through the Knowledge Garden, says Applehans, noting that the firm expects a three-year return on investment of 1,811% for the intranet.

You'd have to search long and hard to find fault with returns like that.

Gittlen is online reporter for Network World.

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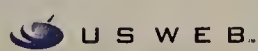
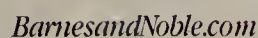
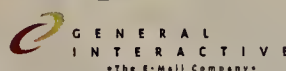
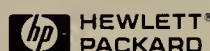
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# CLEAN UP THIS MESS!

TAKING HEED OF THESE FIVE TIPS OUGHT TO GET EVEN THE UNTIDIEST OF INTRANETS IN ORDER.

BY MARK GIBBS

**A**ren't they messy? I mean, really! Have you ever seen a sloppier bunch than your intranet content providers — that is, with the exception of your kids?

If you're a parent, you probably know all too well how difficult it can be to get kids to clean up their rooms. More often than not, they ignore your pleas for tidiness.

And if your intranet has been running for more than a few months, that means it needs cleaning, just like a kid's room would. These five tips ought to help.

## 1. FIND AND FIX DEAD LINKS

When perusing the intranet, users get frustrated following links to nowhere, as happens when authors move or delete documents or Web sites but don't change associated hyperlinks. That's why you need to get at least one of the various tools now available for finding and correcting broken links. (You might need more than one because no single product yet offers a full feature set.)

I recommend Mercury Interactive Astra SiteManager 1.0 on the strength of its content analysis, reporting and site-mapping features. But Web Analyzer 2.0 from EveryWare Development and Coast WebMaster 2.02 from Coast Software are worth considering, too. (For a review of these and other Web content managers, see *Network World*, Dec. 1, 1997, page 53.)

Most important, IT has got to use these tools regularly. Ideally, that means searching and fixing on a weekly basis or, on a large intranet, daily. If the intranet is overly large, you may have to do daily scans selectively.

What's more, it should be standard practice for intranet content providers to check for problems with their links. A good tactic for getting them to do so is awarding a monthly prize for the best content.

## 2. REMOVE REDUNDANT CONTENT

As your Web authors get more confident, they'll start adding small icons that label page items as "New" or "Revised" or what have you. But novice





content providers tend to duplicate each graphical element rather than use the same item they've already made for a previous page. For example, a human resources manager might have identical New icons in her press releases and benefits information subdirectories.

This duplication is common, but most Web authoring packages don't address it. That means you've got to alert content providers to the problem and get them to draw their graphics from a library of commonly used items. The library can be filed in a content provider's subdirectory or a shared directory.

Things are more complicated if content providers are copying graphics from one page to another in an authoring tool and then saving the page with the copied image. The authoring tool usually will ask for a file name to save the graphic under and the users, not understanding that they already have a copy of the image saved, will save the file under a different name.

For example, our HR manager writes a press release, then calls up a benefits information page so she can copy a New icon, stored as `binew.gif`, and place it and the press release on a new page. When saving the page, she saves the New icon as `prnew.gif` — same content as `binew.gif`, different file.

This is harder to fix. It requires you to scan for all image files and then check those of the same size to see if they do, indeed, have the same content.

You'll need a utility such as Cerious Software's ThumbsPlus for this work. ThumbsPlus builds a database of all image files and then lets you sort the images by size and display thumbnails. This makes it easy to inspect a large number of files quickly.

### 3. CENTRALIZE RESOURCES

As I indicate in Tip No. 2, resources used by multiple authors are much easier to control if there is only one centrally managed copy of each. To make this work, you need to keep shared authoring components such as graphics and boilerplate text in a standard

location on all corporate Web servers and index them through a set of Web pages that also explains their use.

#### 4. PREVENT CONTENT FROM GROWING OLD

By cross-referencing your intranet server logs with a list of documents ordered by last access date, you'll find out which documents aren't used often or at all.

Documents that aren't used often might be

documents might not be of interest to anyone, but you can't just throw them away. Even a rarely accessed document might be crucial when needed.

You do want to weed unused, unlinked and infrequently accessed documents from the intranet, but you don't want to destroy them. Moving such documents to long-term storage, such as tape, would give you the flexibility of restoring them to the intranet if need be.

When you move the documents, you'll have to find and fix links to them using a tool described in Tip No. 1. You could point those links to a generic document that says the target has been archived and offers a form for requesting the material.

Another technique for preventing intranet content from growing stale is time-stamping documents. You can do so by examining the modified date set by the operating system for files that haven't changed in, say, six months. Alternatively, make content authors include a last-modified field in each document.

In either case, you can remove documents that don't comply or are older than a certain date.

## 5. ENFORCE STANDARDS

Your clean-up campaign has to include checking for compliance with publishing standards. If your publishing standards are well-defined, this will be easy. Requiring every document to contain the author's name and e-mail address makes it easy to find those who don't comply.

But once you find offending documents, what should you do? Much depends on how many incorrectly formatted documents you find, your authority and how much work is required to fix the problem. In general, you should check all newly added documents each day for standards compliance. ●





INTRAVERT

# Time to rethink management

BY MARK GIBBS

**M**anaging people is hard. I know, I've run three technical support groups so I have experienced how complicated, repetitive and frequently frustrating management can be. But creating an effective organization with happy members is also enormously rewarding.

But traditional ways of managing people are less effective in the intranet era. For the reasons behind this, we need to consider how our businesses have changed.

First, the speed of business has increased dramatically. We have to make decisions faster, and we need information faster. If we don't respond as well as the customers expect, our now global competitors are only too ready to do so.

To make decisions faster, we have to build organizations that have less formulaic business practices — we can no longer rely on rigidly structured approaches to doing business.

Rigid structure, I would argue, is the reason groupware is generally unsatisfactory. Intranets, on the other hand, have developed so fast because they provide the right amount of structure without too many constraints.

While intranets provide a more effective basis for group support, they also reinforce the separation of staff and management. Many workers use e-mail, the backbone of intranets, as the main channel for communicating with other employees and with the rest of the world.

More staff members than ever before require PCs to do their jobs. Along with this we are seeing the curious phenomenon of managers who manage by e-mail. This may sound acceptable, but the fact is e-mail is far too constrained for effective management and most managers don't express themselves well enough to get the best out of it.

Combine management by e-mail with increased work force mobility (seeing customers sells more than calling them on the phone) and telecommuting, and managers are becoming disconnected from those they manage. And when the two are disconnected, evaluating employee performance becomes difficult if it is done in a traditional framework. The old way still used by many managers is "management by wandering about." The theory is that managers can drive their employees to effectiveness by looking over their shoulders.

But when your employees are mainly online

or using applications and quite possibly not even in a central office, managing by wandering about obviously doesn't work.

Now it comes as no surprise to me that one of the complaints I keep hearing from managers about intranet service and Internet access is that they provide an opportunity for the staff to waste time. Typically cited are nonwork-related surfing and e-mail, and the endless tweaking of intranet content. Sure, these things happen, but before you start blaming the technologies consider what's behind these apparently time-wasting activities.

The first problem is managers' perceptions of what defines nonwork-related surfing and e-mail. If this is evaluated by looking over a worker's shoulder (whether in reality or by looking at server or other access logs), it will take you a lot of research to really know that the activity is truly not work related.

Many managers think, for example, that e-mailing jokes isn't relevant to work. On the contrary, passing around jokes and other tidbits is a great way to build relationships.

Next is the issue of constructive playing. Fooling around with intranet content is a requisite for skills development. Languages such as HTML and JavaScript aren't easily mastered without developing an insight

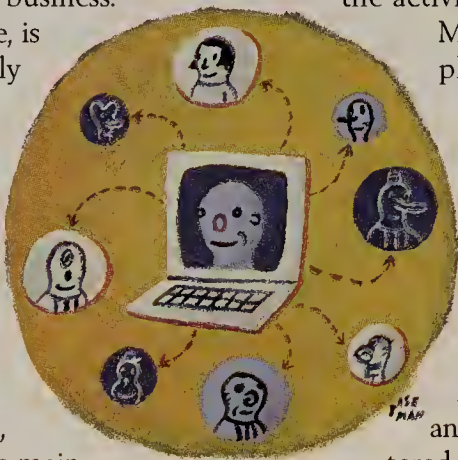
into how they work — something that comes quickest when you play.

Consider page design. Unless you look at other people's designs, deconstruct their work, then adapt and extend, you wind up reinventing the wheel. Sure, you can figure out for yourself how to create JavaScript-driven buttons that change as your mouse passes over them. But why? Hundreds of people already have written the code, which is available for examination.

So what is the new way of managing staff in the intranet era? Simple — you have to rely on quantitative measures of individual performance rather than qualitative assessments of whether the staff appears to be doing its job.

And guess what? Intranets can make management easier. By providing online job definitions, defined work objectives and feedback, the need to keep an eye on staff disappears and the organization focuses on what really matters: results.

*Gibbs, a really good manager, can be reached at [imcolumnn@gibbs.com](mailto:imcolumnn@gibbs.com).*



## Charge-back: A matter of choice

BY STEVE BLASS

*Please step in and lie down, the doctor is in for consultations. As a network architect at Houston-based Sprint Paranet, Blass understands the strain of people who are developing and managing intranets. Send him your problems at [dr.intranet@paranet.com](mailto:dr.intranet@paranet.com).*

### Are companies implementing charge-back policies for intranet use?

It depends. Some companies charge back for all IT services, including those related to the intranet. Other companies see intranet accounting needs as the reason for instituting IT charge-back processes for client/server resources. In some cases, IT splits costs at the department level based on a head count or some other agreed upon standard of measurement. In other cases, IT tracks server, client and network use and charges for every bit of data downloaded. A lot depends on whether management views IT as a cost or as


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INTRANET

a service center. One common model is to establish a standard service level for a monthly per-person charge and then augment that with established pricing for requests that fall outside the scope of the agreement. In such an environment, departmental intranet content producers might provide and maintain server resources after negotiating with IT to get network connectivity.

Tracking intranet spending, expenses and funding can be handled in as many different ways as there are corporate cultures and blends of legacy technology.

### Is it possible to split a T-3 pipe into three 15M-bit/sec lines and then take one of the smaller chunks and dedicate 10M bit/sec to intranet use and 5M bit/sec to Internet access?

Yes, you can split a 45M-bit/sec T-3 circuit into a number of smaller virtual pipes and allocate bandwidth for specific uses. However, splitting a T-3, which is 28 64K-bit/sec lines, into exact thirds will take some careful arithmetic.

Whether your equipment will partition the bandwidth just the way you want is another matter. You'll need a chassis that supports the incoming T-3 and allows the bandwidth to be distributed easily among collections of T-1s. One device with the flexibility and capability to support a wide variety of transport interfaces is Adtran's Atlas 800 series.

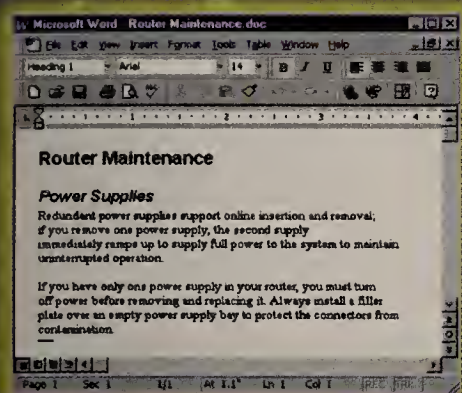
You have other choices as well. One worth looking into is whether your service provider can provision the lines the way you want. Frame relay or ATM services may be alternatives to leased lines.

GARY BASEMAN



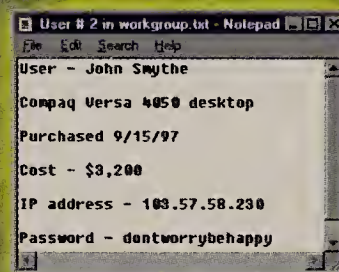
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# Introducing Jasmine™ Objects @ Work™



# Technology Update

Covering: Evolving Technologies and Standards

## ATM flow control: Recipe for demanding apps

By Mikkel Brodersen  
and Bengt Beyer-Ebbesen

The use of switched ATM to provide a high-speed backbone for interconnecting Ethernet or token-ring LANs has become a fact of life in many business enterprises.

Often the intent of companies deploying ATM is simply to provide a high-bandwidth pipe for delivering traffic — pre-

Because the UBR service category is the simplest for vendors to support and customers to deploy, it has become the predominant service level used with current ATM networks. However, as traffic over the networks has increased, the use of UBR has caused a serious problem: network congestion.

This situation has led to increased interest in ABR as an

throughput.

This, in turn, can prevent the exacerbation of network congestion that results from IP frame retransmissions.

Two basic ABR flow management technologies have been specified within ATM standards. One, Explicit Forward Congestion Indication (EFCI), involves the retasking of a cell header field, the payload type

hardware support must also exist, to report congestion. In response, the sending station will speed up or slow down the transmission of data in accordance with rate information specified in the resource management cell.

Until recently, the technology required to support ABR flow control had not been added to ATM switches or adapters. That has been largely due to the lack of interest in ABR from network product customers and the resulting lack of impetus to add ABR functionality to network products.

### Hardware vs. software

However, with congestion becoming a problem in many ATM networks using the UBR service category for most traffic handling, ABR and EFCI explicit rate flow control are receiving renewed attention.

Some vendors are seeking to add support to existing switch products through software enhancements, while others, including Olicom, prefer a hardware-based approach. The decision to support ABR flow control through software enhancements has garnered some criticism within the trade press.

Effective flow control using explicit rate, the more sophisticated flow-control technology, requires the management of resource management cells and the application of complex algorithms to determine appropriate transmission rate settings. For switches already bogged down by congestion, it may be asking too much of resident processors to perform this task in software.

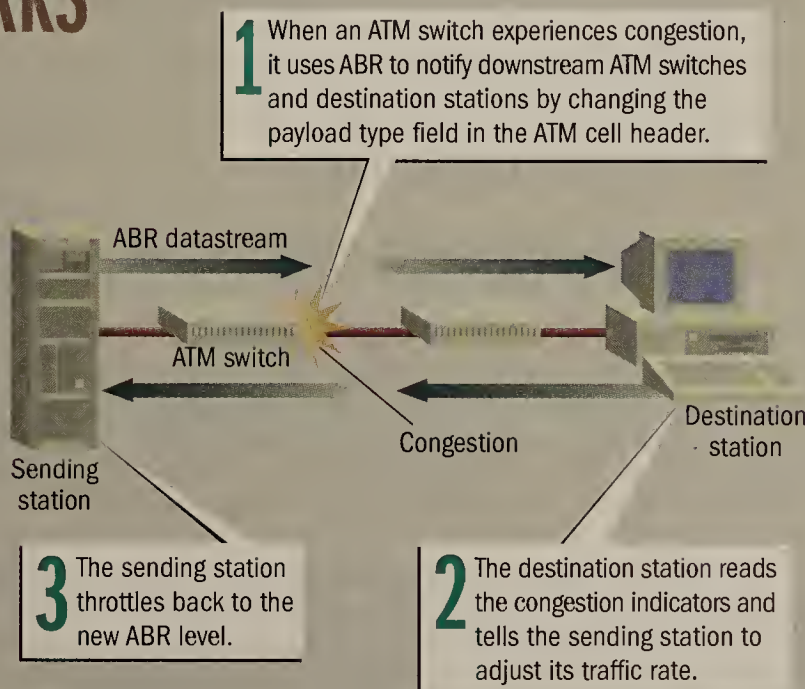
For now, the important point is that dramatic improvements in network throughput are possible through the application of ABR with EFCI or explicit rate flow management technology.

*Brodersen and Beyer-Ebbesen are product managers for ATM adapters and LAN switch products, respectively, at connectivity vendor Olicom A/S. Contact Brodersen at mbr@olcom.dk and Beyer-Ebbesen at bbe@olcom.dk.*

## HOW IT WORKS

### ATM ABR traffic flow control

ABR technology is used in conjunction with other ATM flow management technologies to control congestion in ATM networks. ABR provides the means to set a minimum and maximum rate of transmission for traffic, while minimizing ATM cell loss.



dominantly from IP applications — from one part of the network to another.

Of course, ATM was designed to provide not only big pipes, but also intelligent pipes. Through a combination of hardware and software implementations, network administrators can assign the traffic from certain sender stations, usually routers or servers, to specific service levels on the ATM backbone.

### High-end service

At the high end of the service categories are constant bit rate (CBR) and variable bit rate (VBR). The ATM standard also specifies two standards for time-sensitive traffic: unspecified bit rate (UBR) and available bit rate (ABR).

alternative service category. ABR is a bridge service between the guaranteed services of CBR and VBR and the laissez-faire handling of traffic offered by UBR. ABR, used in conjunction with flow management technologies, provides the means to designate a minimum and maximum rate of transmission for traffic while minimizing cell loss. ABR also provides congestion management.

In a network utilizing ABR, the switch informs the transmitting station (via the receiving station) about congestion situations. Depending on the flow-control technology that is supported by the switch, the switch can request a new rate for transmitted data, which it calculates will minimize buffer overflow, reduce cell loss and improve

field, to serve as a simple on/off switch for use in regulating sender station transmission rates. When congestion is detected at the switch, the field is turned on in a cell being directed to the destination station. Once received, the destination station responds with an instruction to the sending station — in the form of a resource management cell — to slow the speed of transmission.

A second flow management technology, explicit rate, uses special software and hardware in the switch to generate and inject a resource management cell into the ABR datastream every 32 cells. These resource management cells travel from the switch to the receiving station and then back to the sending station, where software and

### NUTTER'S NETWORK HELP DESK

Ron Nutter, a Master Certified Novell Engineer and Microsoft Certified Systems Engineer in the Lexington, Ky., area, tracks down the answers to your questions. Call (800) 622-1108, Ext. 476, or send your questions to [helpdesk@networkref.com](mailto:helpdesk@networkref.com).

I manage a 100-user NetWare 3.12 token-ring LAN with Category 5 unshielded twisted-pair cabling. Five multistation access units are in one wiring closet, and one is located in a separate building connected by underground cable. Users can be logged on to the NetWare LAN and attach to the Unix servers simultaneously. Three RS/6000 servers also share the LAN.

We're pushing the envelope on lobe length and are maxed out on connections. I've read that the limit on 16M bit/sec token ring is 72 connections; we've got 85 connections. I'll soon have to add more users to the network.

Is there a device I can use to split the network so I don't go over my connection limit? Can I use a router or switch to do this? And is there some method to boost the signal in order to avoid these connection limits?

Via e-mail

You should check out Novell Technical Information Document No. 14402, which indicates a 96-node station limit on a single token ring. However, I wouldn't recommend taking the connection count any higher than you already have done.

To alleviate network congestion, you can use a router or switch, or you can add a network card in one of the NetWare servers and establish a second ring on the network.

There's no way to use a signal booster to get around token ring's 96-station limit. I recommend putting the nodes in the other building on a separate ring and connecting that ring to the original one via fiber-optic cable. This would help avoid the introduction of electrical problems.





## EDITORIAL *i n s i g h t s*

### Ship-date shenanigans

All these problems with products shipping on time have got me hotter than a penguin in the desert. It seems nobody can ship anything on time. And customers, repeatedly burned by these promises, have taken to simply shrugging away the delays.

We've all got to stop letting the sloppy software yahoos get away with this ship-date murder. Sure, developing software is complicated, and unforeseen hitches happen. Duh. So why don't the companies just account for these problems in the schedule? Because they simply don't care.

A number of years ago (bear with me while I name-drop here), I interviewed Bill Gates at Comdex. Right before that, I interviewed John Landry, then the chief technology officer at Lotus. I asked John if he had any questions for Gates. "Yeah, ask him when he is going to stop \$#@^% us around on Windows' ship dates," he said.

So I did, and said something like . . . "Umm, I was wondering, Mr. Gates . . . because your software usually misses its ship dates, and because, to some extent, people plan around those dates, would you, uh, consider a new way of predicting the dates that is more accurate? Or perhaps provide a window under which you expect to ship a product, like, 'We hope to ship in a year, but

complications could stretch it out to two years?'"

Bill almost busted a gut. First, he looked at me like I was some kind of an idiot, sort of the way my kids do now. Then he screwed himself up and let loose something along the lines of, "Show me the guy who thinks the date is the date. Is this someone new to software? Is this someone new to journalism? I want to meet the guy who thinks the date is the date!"

This was all pre-Windows 95, which should have been Windows 93 or 94. Since then, Microsoft and others have continued to give rosy projections about when God's gifts to software will ship, only to revise and revise when coders run into snags. Why? Because we all let them get away with it. We now expect software to be late and, thus, are quite forgiving of the poor software vendors. Instead of being all nice about it, how 'bout we tell 'em to knock it off?

Try this: Oh holy software vendor, go back and look at how far off you've been in the past and add that percentage to any future ship dates. Then offer it up as a goal, but publicly admit you may do some stupid things that naturally could push the date back. Maybe you'll even ship early someday. Maybe.

Doug Barney, news editor

dbarney@nw.com

*T o t a l l y   U n p l u g g e d   •   I r a   B r o d s k y*

### Needed: A philosophy for the cyberspace age

Something is missing from the computer networks industry: a sense of purpose. We're so busy building and using networks that we seldom stop to ask ourselves how they fit into the larger scheme of things. Do people build networks just because they help pay the bills, or as the only species that assembles knowledge for transmission to future generations, are we striving toward some long-range goal?



Sure, the Internet is teeming with third-wave Pied Pipers. Some, such as the Progress and Freedom Foundation ([www.pff.org](http://www.pff.org)), focus on socioeconomic issues such as opposing or influencing government regulation. Others, such as the Extropy Institute ([www.extropy.org](http://www.extropy.org)), seem caught up in a hedonistic celebration of technology. There is surprisingly little discussion about technology's ultimate purpose.

There was once a respected group of people who devoted their lives to exploring such fundamental questions. They were called philosophers. Often, they were also scientists. Michael Faraday, the 19th-century pioneer of electricity and magnetism, to whom the information technology industry is greatly indebted, routinely referred to his fellow researchers as philosophers.

Of course, philosophers did more than just raise bothersome questions. Philosophers were meticulous in their analysis and articulation of ideas. They helped others clarify their thinking and, on occasion, could be a source of inspiration.

Today, few IT researchers can rightly be called philosophers. We have accumulated so much knowledge and each individual must master so much detail in order to have any impact that virtually all scientists are specialists. We consider anyone who calls himself a philosopher an intellectual jack-of-all-trades — and, consequently, a master of none.

So we have consigned philosophers to academia. Worse, the entire profession seems to be in a cosmic rut. Most philosophers busy themselves analyzing the structure of language. Those who venture into the realm of technology focus on what they see as its ethical dilemmas. To wit, they believe the philosopher's role is to

warn society of technology's hidden dangers. The advent of computer networks, and more specifically the establishment of cyberspace, cries out for a new philosophical movement. We need a new breed of philosopher — people with the courage to propose and debate the long-term goals of technological development.

It's often said technology is neither inherently good nor bad — it's what we do with it that matters. It's odd that philosophers don't challenge this view. Philosophers have always believed knowledge to be the highest pursuit. Surely, they appreciate the wondrous tools, from the printing press to the Internet, that technology has provided for the dissemination of learning.

If I am wrong, if technology does pose serious risks to humanity, a resurgence of philosophy is desperately required. But even if I am right, there is still a compelling need. The universe can be a dangerous place, and it would be a shame if we came up just short trying to save ourselves from extinction. Philosophers could help us identify the right priorities.

Here are some of the questions I think philosophers should start exploring. Must technology destroy religious, political and social institutions, or could it enhance them? As machines take on more functions, which roles should be reserved for humans? Will machines ever be able to think? If so, should humans plan to eventually abandon their physical bodies and migrate to cyberspace?

Answers to these questions would certainly put networks in a new light.

Brodsky is president of Datacomm Research, a Chesterfield, Mo.-based consultancy. He can be

## MESSAGE QUEUE

Send letters to [nnnews@nw.com](mailto:nnnews@nw.com) or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

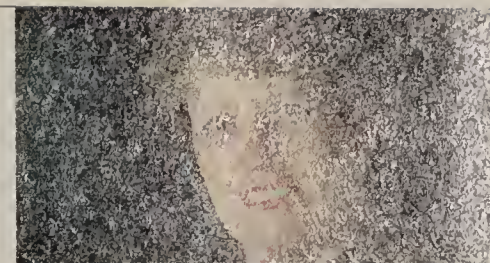
### Carrier resistance

Thanks for the interesting article on IP convergence ("There's no stopping IP," Aug. 10, page 35). The article points out the attempts made by the carriers to provide ISDN and ATM as vehicles for convergence. I believe we can agree that IP will eventually dominate all the others, despite the carriers' efforts. As the article notes, the carriers have a billion-dollar investment in doomed circuit-switched technology to protect. Their only incentive to embrace convergence is survival.

Witness the Intelligent Network World Forums, spon-



# The importance of being experienced



**I** have been following with interest the Network World Fusion forum discussion on the merits of technical certifications from hardware and software vendors. My colleague Dave Kearns wrote a series of columns on this topic last spring. His basic assertion is that certifications without commensurate experience aren't worth the paper they're printed on. Did Dave ever stir a hornet's nest with *Network World* readers!

Most of the contributors to the forum agree that certification from a vendor such as Novell or Microsoft is most valuable when combined with years of experience. That's the ideal world. We'd like to think that all technical people could spend a few years setting up or supporting networks, then earn certification to prove to the outside world they are indeed recognized experts. The fact is, many people use the certification training and tests as an entry into the world of networking. This is OK, as long as the newly certified person does not present himself as a fully qualified network professional. He should recognize that certification is only a starting point and it must be combined with hands-on experience.

Recently, my company experienced firsthand the dangers of a "paper professional." We hired a young man whose resume touted Novell certification. He also claimed to be working toward Microsoft certification. Despite his dearth of real-world experience, we respected his training and gave him a shot. Turns out, he couldn't use a spreadsheet, much less maintain a network. His resume puffery was quickly revealed, and now he'll be getting his experience elsewhere.

Kearns proposed the possibility of some type of apprenticeship program for technical professionals. We could take this a step further by implementing a requirement for professional references before a person can obtain a certification — sort of like college graduates who can't get a job without prior experience, so they fall back on references from professors and community leaders.

Compaq actually comes close to requiring references or previous experience. Candidates for Compaq's Accredited Systems Engineer (ASE) program must be already certified on at least one network operating system (NOS), either from Novell or Microsoft. Without the accompanying NOS experience, Compaq will not award full certification on its products.

Considering that most certification programs are offered and controlled by hardware and software vendors, we get what we pay for. For the most part, the programs are initiated to serve the vendor by creating an extended sales force and are necessarily biased toward that vendor's concepts and products. Do the programs serve the

network community at large or companies that seek the services of a well-rounded network professional? Hardly.

Perhaps what we need is an impartial body that is not funded by vendors to offer a true test of knowledge and skills, not just an exam on a particular vendor's products, but of network concepts and practices in general. It could be patterned after the Certified Public Accountant program. Being a CPA means you understand good accounting practices, not that you are proficient in Quicken or QuickBooks.

Having just criticized the vendors' programs, I'll now defend them because I believe they do provide some value to the network community. The vast majority of systems engineers who get certified do so to increase their knowledge of networking and to stay up-to-date on products and technologies.

The vendors do a good job of providing this education, at least on their own products. And because most vendors require annual renewal of certifications, we know the certified professional's knowledge must be kept up-to-date.

Another huge benefit of vendor certification programs is priority technical support. Novell, Compaq, Microsoft, IBM, Hewlett-Packard and Cisco all provide priority telephone support for their certified systems engineers. Whether you work for a corporation and maintain just one network or work for a systems integrator and install hundreds of networks, priority technical support is a gem to have in your back pocket.

Certification programs also promote a sense of community among their members and encourage the exchange of tools, tips and techniques among peers. For example, Compaq ASEs have a Web site where they can post or download information that will help their fellow ASEs around the world. If an ASE has a question about configuring a server, it's likely that at least one of his peers has been down that path already and can provide pointers.

Certification programs do have value, as long as we recognize the inherent biases that come with vendor-sponsored programs. Until we have that totally impartial body willing to create a standardized universal certification process and program, we'll have to rely on the likes of Novell and Microsoft to tell us who is qualified to call himself a "certified" network professional. And, as Kearns asserts, we'll have to do our own probing into a person's background to find out if he has the commensurate experience we seek.

*Musthaler is vice president of Currid & Co., a Houston-based technology consulting firm. She can be reached at linda@currid.com.*



sored by the International Engineering Consortium (IEC). The agendas of the 1996, 1997 and 1998 forums were dominated by circuit-switched voice applications of the intelligent network. A few of us on the planning committee attempted to put more emphasis on data and Internet applications of intelligent networks, but the carriers on the planning committee (mostly regional Bell operating companies) just weren't interested. That's why you didn't see it on the agendas.

One of the hottest topics right now is the use of intelligent networks to divert Internet access calls from the circuit-switched network. You didn't hear a word about it at this year's forum. They still see intelligent networks only as a vehicle for fancy voice call forwarding and can't relate to data calls.

So I guess the convergence will happen in spite of the incumbent carriers.

*Don Berteau  
Vice president  
GeoNet, Ltd.  
Sebastian, Fla.*

## Redundant anonymity

Regarding your article "Hiding out on the Internet" (Aug. 10, page 1):

Why would Zero-Knowledge Systems (ZKS) even need to offer anonymity for e-mail? At my university, e-mail identity is as anonymous as a user chooses it to be. There's no binding of e-mail address to a name, sex, university job status or age.

For an ISP to offer e-mail anonymity via ZKS seems redundant in the sense that if some spam comes by way of the ISP, the ISP has to identify the source to eliminate the spammer's violation of the acceptable-use policy. So I can't see

the advantage of ZKS for e-mail; it might even cause more work for the ISP!  
*Craig Paul  
Systems support software analyst 4  
University of Kansas  
Computer Center  
Lawrence, Kan.*

## To have and have not

In his column "Politicians don't get the 'Net" (Aug. 10, page 78), Mark Gibbs contends that not having a car is a greater disadvantage than not having Internet access. For a change, Gibbs has missed the target.

Having Internet access is nothing like having a car. The "have" part of the equation is access to knowledge and the ability to partake in the global village (to borrow a term from Joseph Campbell).

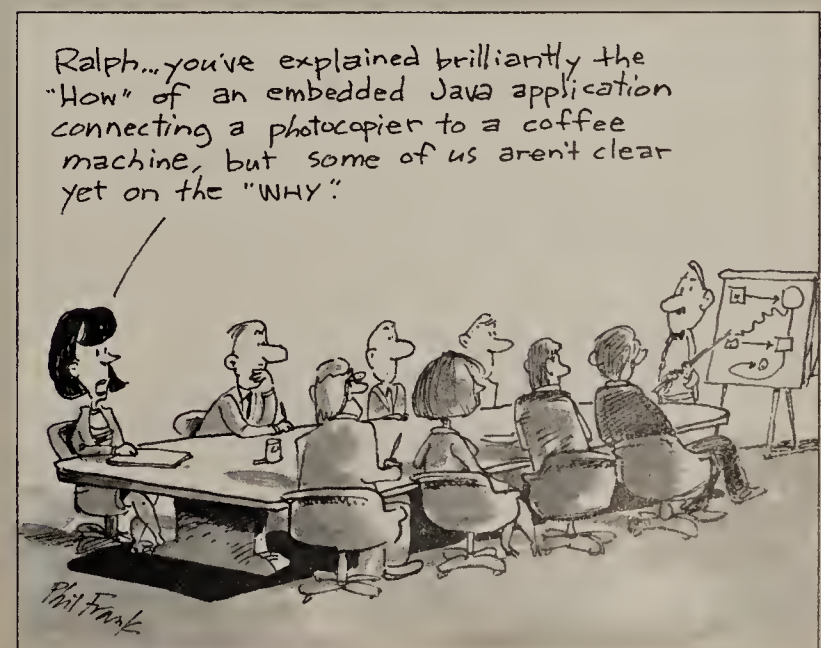
The "have not" part is the lack of technical skills in an increasingly technical society and job market.

Owning or driving a car does not determine your career prospects (unless you want to be a taxi driver). Conversely,

one's computer skills do have a major impact on one's future.

I do agree with Gibbs that politicians have no clue on how to leverage the Internet.  
*Dean Grant  
Greenville, S.C.*

## Teletoons



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# FACE-OFF

## Cable or DSL: Which is better for telecommuters?

*Traditionally, telecommuters have relied on dial-up connections. Now your choices are expanding to include cable and DSL. Which of these new options is most promising?*

**By Mark Housman, Paradyne**

Digital subscriber line (DSL) is the only practical choice for telecommuters. Cable modems are to high-speed Internet access what party lines were to early telephony. As soon as phone customers were offered a private line, they took it.

I recently had a cable modem installed in my home to see firsthand what it's all about. Do I think cable modems should be banished from the face of the earth? No. Even though it took four truck rolls to install mine? No. Even though they trenched my yard to lay new coaxial cable? No. Even though the cable modem couldn't plug into the existing cable jacks? No. Even though when my cable goes out, I lose Internet access and cable TV? No. In fact, I can't think of anything better than competition from cable modems to get DSL rolled out.

Cable modems have an early rollout lead — despite the fact that DSL offers superior service, copper reaches 20 times the number of homes and coaxial cable doesn't really touch businesses. How could this be? Simple: The cable guys are good marketers. They bundled and priced cable as a turnkey installation with no contract, and they didn't wait for a standard.

So with all of this, why is DSL better for telecommuters?

First, DSL is easily installed. Your copper's already there. Your competitive local exchange carrier (CLEC) hot-wires your connection and you can order your pizza on your phone line while you're downloading your e-mail. Cable needs fiber to the neighborhood before two-way cable modems can be installed in subscribers' houses.

Second, DSL guarantees bandwidth. The bandwidth on a cable modem is shared and there are no service-level guarantees. On a DSL link, CLECs can provide specific bandwidth per customer.

Third, DSL outperforms cable. Cable appears to offer good performance, but that is temporary. Cable is lightly loaded right now with few subscribers. Chuck Thacker of Microsoft recently warned: "In a heavily loaded branch ... downstream bandwidth available to any one cable modem user is about the same as it would be with a 33K bit/sec modem."

What about the in-home LAN? If you are one of the growing number of users with more than one PC, you'll need to connect them all. Cable modems don't provide subaddressing or LAN capabilities. With some innovative DSL solutions, you get multiple virtual lines and the ability to do print and file sharing — without new wiring. This is the promise of the "smart home" fully realized.

What about security? The cable guys will tell you they have encryption, but who cares? With DSL, you can create a virtual private network that completely bypasses the Internet. With DSL you can have either a fixed or dynamic IP address; cable only offers dynamically assigned addresses. Furthermore, with cable you have no choice of end points. Cable is terminated at the cable company's ISP; DSL services can have multiple ISPs, and one of them can be your corporate intranet.

What about reliability? How often does your cable go out compared with your phone service? For performance, quality of service, security, functionality and reliability, DSL is clearly the best bet for telecommuters.

*Housman is vice president of marketing for Paradyne, a leading network digital access company headquartered in Largo, Fla. He can be reached at (727) 530-2000 or mhousman@paradyne.com.*



**By Tom Cullen, MediaOne**

Many industry experts agree the vehicle that's going to provide high-speed access to the World Wide Web is the cable modem. According to Kinetic Strategies, publisher of "Cable Datacom News," cable operators are adding more than 1,000 cable modem subscribers per day. At this pace, there will be more than 400,000 subscribers by year-end and more than

one million by the end of 1999.

Hybrid fiber-coax (HFC) networks have more capacity, flexibility and expandability than any other available wired alternative. HFC nets offer consistent data speeds up to 50 times faster than 28.8K bit/sec dial-up phone modems — and in some cases faster than a T-1 connection. In addition, HFC networks beat ISDN and digital subscriber line (DSL) services on price and performance.

HFC networks have enough capacity to allow you to watch cable programming while you're online. Your connection to the Internet is constant, just like your connection to cable TV.

Cable modem subscribers can receive unlimited, high-speed Internet access for between \$40 and \$60 per month, depending on who provides the service. This rate is competitive with DSL service but much lower than residential ISDN, T-1 or high-speed wireless access rates. And unlike other options, the cable operator is your ISP, which eliminates at least \$20 per month in additional charges.

Cable modem systems operate on a shared access platform, not unlike a typical LAN. This has led many to speculate that if every subscriber in a particular node (one node equals 250 to 500 homes) is on the net at the same time, they would be competing for bandwidth.

However, unlike phone-based systems, in which each user is allocated a dedicated connection, cable modem users share the network with other active users and only access the network's resources when they send or receive data in quick bursts. For example, a user typically downloads information and then stops to read it. The next user would then be using the net during the first user's "quiet" time, and so on.

Finally, although DSL may deliver high-speed access, it can do so only within a relatively short distance from the central office housing the software and hardware system that makes the technology work. So your neighbor across the street might be able to get DSL but you can't because you live just a little too far away. In fact, taking into account distance from the central office, the condition of the phone lines and differences in technical standards throughout the network, today less than 35% of homes are eligible for DSL. Much of the infrastructure necessary to make DSL available isn't in place, while cable modem systems are ready right now.

Two-way broadband, which nearly all of the principal cable providers now are installing, uses a single coaxial cable to provide high-speed downloads and uploads. Many areas already are two-way ready and the service will become more available during the next several years.

As speedier access to the Internet becomes more common, the Web will be woven more and more tightly into the fabric of everyday life. We're convinced that the best way to connect economically, seamlessly and speedily will be over broadband networks.

*Cullen is vice president of Internet services for MediaOne, a cable TV and Internet provider based in Denver. He can be reached at (303) 705-7600 or tcullen@mediaone.com.*

Go online to air your views on this issue in our Fusion Face-off running through Sept. 4. Housman and Cullen will be adding their thoughts to the discussion.





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# Begging for bandwidth

*While most IT budgets got bigger this year, managers had to postpone some projects or find ways to deploy technology without breaking the bank.*

By Elisabeth Horwitt

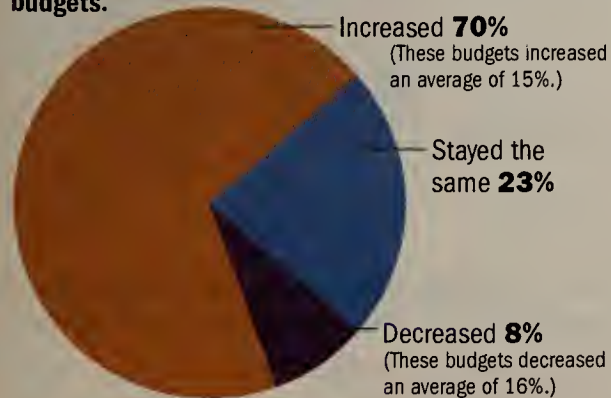
**W**hen network managers met with corporate bean counters to carve out their current budgets, many of their line-item requests came down to one thing: additional network capacity.

Network engineers are facing major design and capacity planning challenges as companies implement more distributed, business-critical applications, says Gerry Cunningham, a partner at Deloitte Consulting in New York. In particular, engineers must plan for the increased network demands of enterprise resource planning (ERP) packages now being rolled out globally.

The results from the 1998 Network World/Deloitte Consulting Budget Survey back up Cunningham's claims. The survey shows that IT administrators face the usual budgeting challenges, such as upper management's strong emphasis on return on investment (ROI). More

### BUDGETS ARE GETTING BIGGER

As a whole, network budgets got a bit bigger in 1998. Respondents were asked whether their current budgets increased, decreased or stayed the same as their 1997 budgets.



Percentage totals more than 100 due to rounding.

than half the respondents said they had to postpone a major implementation, and many complain about Year 2000 expenditures robbing resources from pet projects.

On the other hand, the management approval cycle continues to shorten, and most managers' budgets increased in 1998 or at least held steady with 1997 spending. Major line-item increases are earmarked for areas such as

WAN expansion, switching upgrades, NT servers and network management.

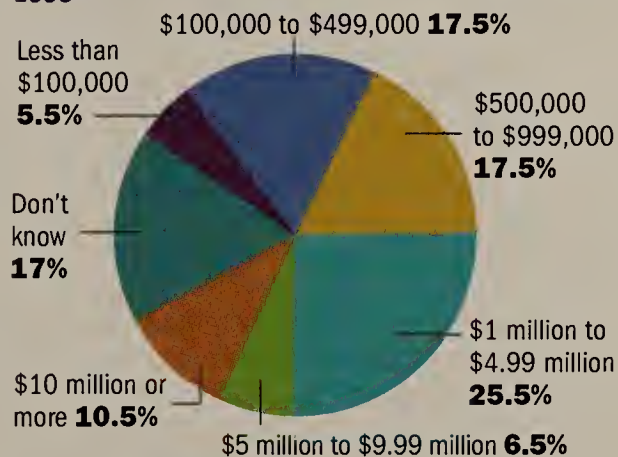
Upper management may finally be understanding the importance of networking, or perhaps the healthy economy has helped loosen corporate purse strings, but the overall budget outlook for 1998 was positive.

The survey is based on telephone interviews

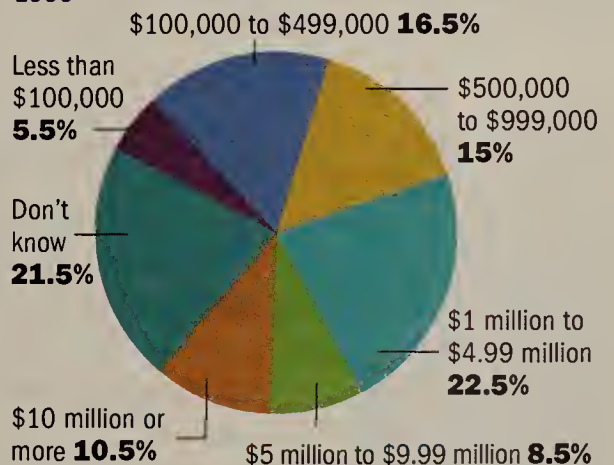
### GREAT EXPECTATIONS

The voice, data and video operating budgets for this year vs. estimates for next year show very little change, though some managers expect their budgets to be bumped up to the \$5 million to \$9.99 million range.

#### 1998

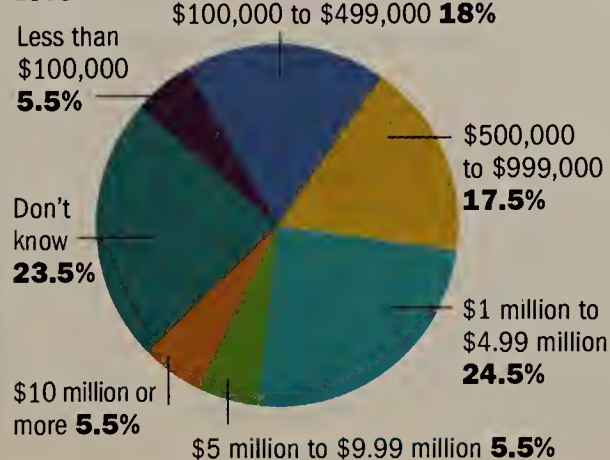


#### 1999

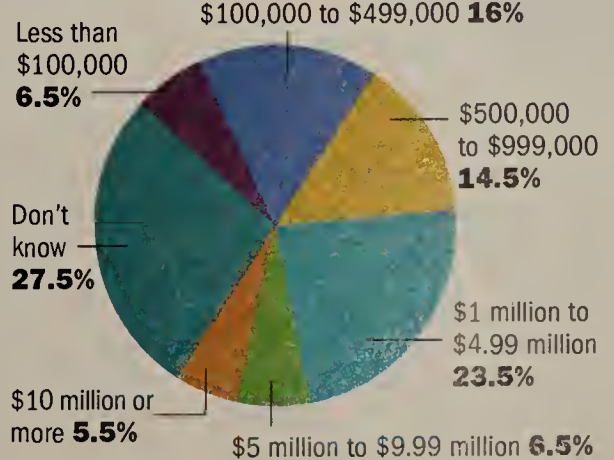


When it comes to capital equipment, a few respondents also expect to jump to the \$5 million to \$9.9 million bracket next year.

#### 1998



#### 1999



Darel Eschbach of Arizona State University ranks Gigabit Ethernet high on his list of 1999 budget requests.

with 200 Network World readers who were responsible for choosing or approving network expenditures. The scope of responsibility varied — 27.5% had purchasing authority for a depart-



ment, while 66% worked on the corporate level. The remaining 6.5% worked for the government.

## Doling out the dough

We asked respondents to name the products, services and network software that received the most significant increases in their current budgets. The question was open-ended to garner more accurate results, and multiple responses were allowed. As such, no one technology received a high percentage of responses.

## MORE ONLINE

Deloitte Consulting, the sponsor of this year's Budget Survey, is one of the world's leading management consulting firms. Its network practice focuses on applying telecommunications solutions and expertise to meet today's business challenges. The firm has network centers of expertise in 15 offices around the world.

Go online for more results of the budget survey.

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Internetwork products such as ATM, Ethernet switches, hubs and routers topped the list of products and technologies receiving additional funding.

ATM seems to be gaining slowly but steadily as a broadband technology of choice. A modest 6% of respondents set aside more money in their budgets for ATM, up from 4% last year.

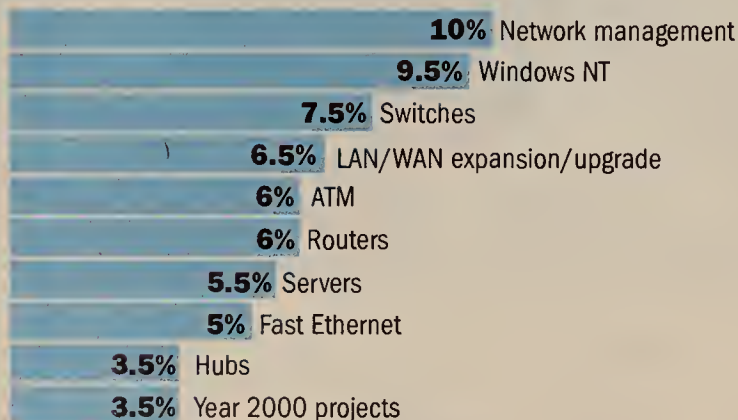
And 6.5% of respondents cited some form of bandwidth, WAN or network expansion/upgrade as getting significant increases.

Such budget allocations come none too soon for many companies. IT needs to budget for

## BIG SPENDERS

Respondents backed the products and technologies below with more budget dollars this year.

(Increase in budget)



Everything else is below 2%.

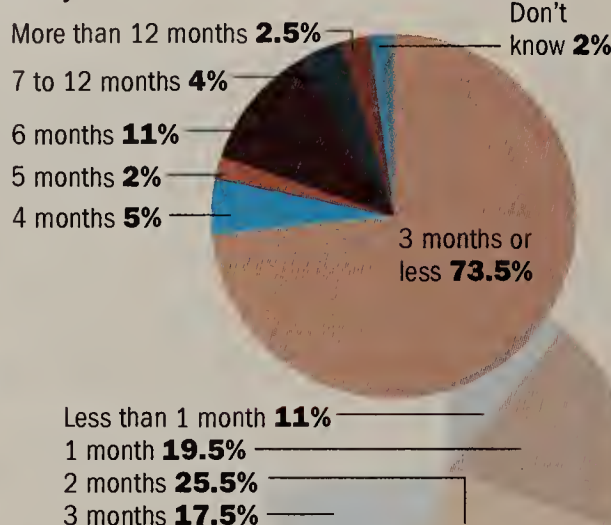
increased network capacity at least a few years ahead of ERP implementations to avoid performance problems down the line, Deloitte's Cunningham says.

Automotive hand-tools manufacturer Snap-on has already tackled an ERP deployment. The Kenosha, Wis., firm just finished rolling out Baan's Triton ERP package to its offices, manufacturing plants and distribution sites

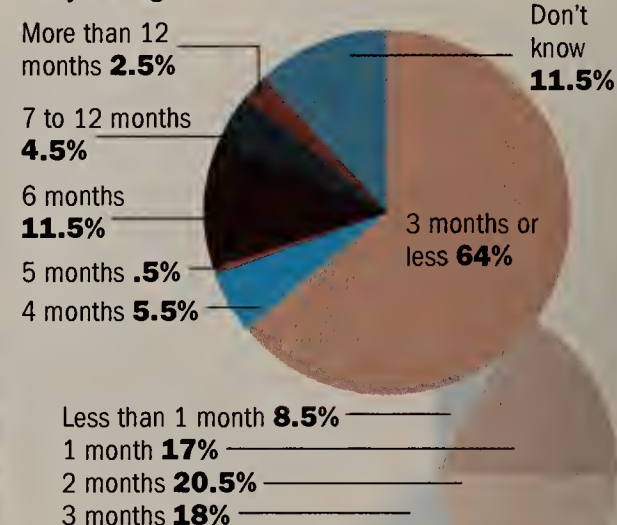
## QUICK TO SEEK APPROVAL

As networks become more critical to business, purchase approval cycles are shrinking. Respondents were asked how many months it takes to get major network expenditures approved today vs. two years ago.

### Today



### Two years ago



worldwide. Bill Sandy, senior purchasing systems coordinator for Snap-on, says the ERP system replaces a hodgepodge of home-grown and multivendor mainframe programs that were difficult to manage and maintain.

The company needed to add several T-1 lines to support the ERP system. Sandy may upgrade some Ethernet hubs on the LAN to Fast Ethernet, but he says the firm's WAN has enough bandwidth to handle the increased traffic.

However, several survey respondents said they're playing a perpetual game of catch-up with their organizations' bandwidth needs.

A growing user community and more server-based applications are driving up traffic at Arizona State University (ASU), says Darel Eschbach, director of telecommunications services for the school in Tempe, Ariz.

"Gigabit Ethernet is our next big budget item," he says. He expects to begin installing the hardware this school year.

"We're in the process of upgrading our infrastructure to the point where we should have been three years ago," says a manager in charge of PC, LAN and user support for the investment side of a major insurance company, who requested anonymity.

Server spending accounted for some of the most significant budget increases from 1997 to 1998 for 5.5% of the respondents. Windows NT grabbed a bigger share of the 1998 budget at 9.5% of respondents' companies.

ASU allocated one of its biggest budget increases to Windows NT servers, including hardware, software and start-up costs such as site preparation, Eschbach says.

The school also budgeted for a new Microsoft Exchange e-mail system.

Overall, there seems to be more in corporate coffers for network systems implementations. Furthermore, approval cycles for major expenditures are shrinking, according to the survey. Almost 75% of respondents said purchase approval now takes three months or less, as compared to 64% who said their 1996 purchases

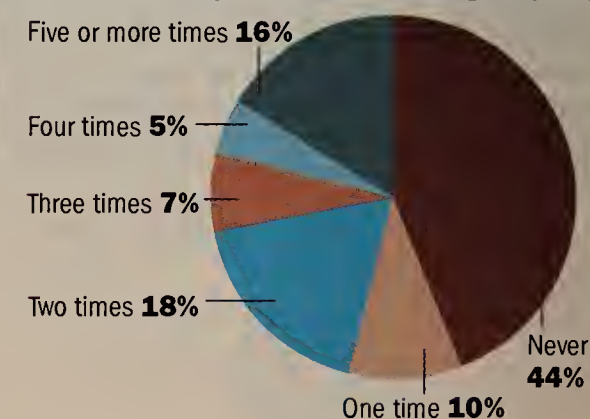
were approved in the same time frame.

But that doesn't mean corporate management has started handing out blank checks. Indeed, the survey found some of the same projects that got big budget increases at some companies had to be put on hold at others.

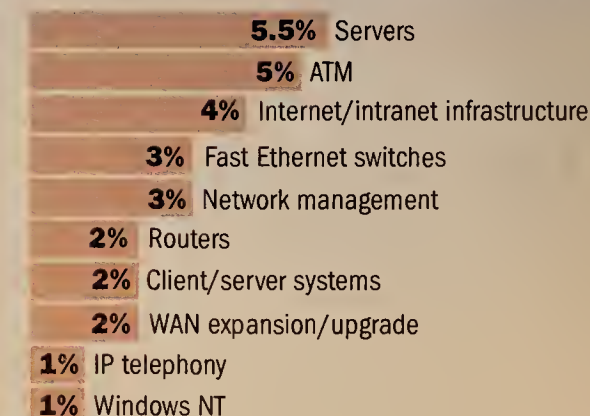
Respondents dealt with managements' refusals to fund major expenditures in 1998 in a number of ways. They made do with what they had, chose lower-cost alternatives, spread out purchases over time or pinned their hopes on getting approval down the road. Some respondents received the funding in a matter of

## FREEZING PROJECTS

Respondents were asked how many times they had to hold back on major expenditures during the past year.



Those who had to delay expenditures at least once were asked what technologies or projects were affected:



Everything else is below 1%.



months by making a stronger business case or simply waiting.

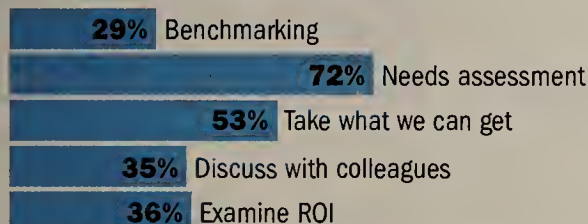
## Postponed purchases

Some 13.5% of respondents said they were forced to delay major expenditures in various network services, equipment and WAN expansion. In addition, 2% needed to postpone client/server software or infrastructure upgrades, and 4% delayed Internet/intranet infrastructure investments. Major network management allocations got the short end of the stick at 3% of respondents' companies, while 5.5% of respondents needed to delay server rollouts.

A more fortunate 44% of respondents said they didn't need to postpone any major purchases this year, the same as the 44% who reported this last year. One-quarter had to hold back on major expenditures two or three times during the past year, while 16% suffered this

## ARRIVING AT A FIGURE

Respondents use several different methods to determine budget amounts for each line item.



(Multiple responses permitted.)



Joe Burnett is struggling to gain approval to hire support technicians for each of the state of Arkansas' 85 government offices.

fate five times or more.

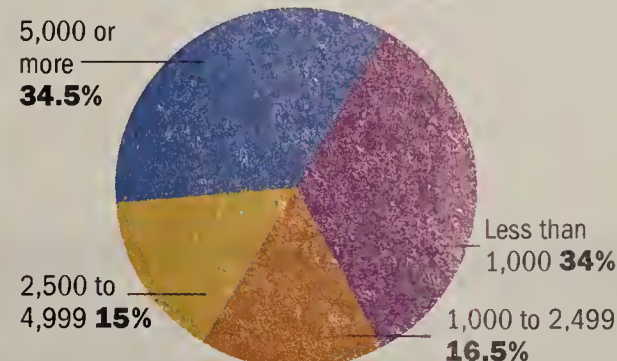
Behind the numbers is a continuing trend toward bottom line-oriented IS budgeting, and the need for network technicians to make a business case for major outlays. In the survey, 36% of respondents said they examine ROI to determine budget amounts for each line item.

"Cost management is a major priority for companies," Cunningham says. "People are still looking at the price-times-quantity equation of what they are spending on networks, and renegotiating their contracts with service providers."

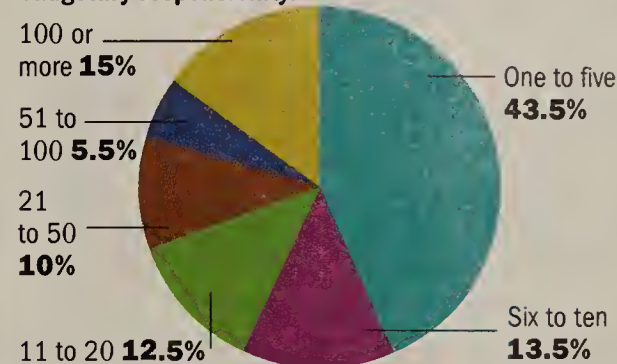
Jesse Rivera, a consultant at Riscorian Enterprise, is doing internal consulting for a major client that put off a big WAN upgrade project this year, largely because "management had little understanding of what the upgrade would do," he notes.

## A WIDE REACH

Number of end users respondents support:



Total number of sites for which respondents have budgetary responsibility:



Even with management officially behind a project, a major implementation can still run into trouble down the road when additional funding is needed. At the large insurance company mentioned earlier, upper management a few years ago decided that in order to become a world-class IT industry leader, it needed to have a world-class IT infrastructure. "But we still can't spend everything we want upfront; plans have to be stretched out and prioritized because of funding," says the firm's PC, LAN and user support manager.

## The fight for funding

Many respondents said upper management balked when it came time to shell out money for systems support and maintenance, particularly regarding the issue of staffing.

"It's kind of tough getting enough money turned loose, especially for support," says Joe Burnett, manager of equipment leasing and telecommunications for the state of Arkansas. He's working to obtain funding for anything related to supporting and maintaining existing systems.

In particular, Burnett's group is trying to secure a budget line item for 1999 that would place a support technician in all 85 state government offices. The state is scheduled to complete a network rollout this month and will need additional support to maintain it.

"A consulting company manages the network, but we still have to have someone local," Burnett says. Management is resisting the initiative and says the state doesn't

# Y2K issue hogs funding

Year 2000 testing and conversion projects are increasingly hogging a larger portion of available IT funding, according to the results of the 1998 Network World/Deloitte Consulting Budget Survey.

Products and services associated with the millennium crisis accounted for the most significant budget increases at 3.5% of respondents' firms. One company had to scale back a Windows rollout to pay for Year 2000 work, while another network manager cited a delay in obtaining approval for a network expansion.

"Year 2000 got the biggest budget increases this year in testing systems and consulting dollars," says Richard Legere, manager of network integration for Adventist Health Care in Rockville, Md.

However, Legere expects the organization to spend even more on the problem next year, estimating the Year 2000 issue to consume at least \$1 million out of a \$10 million budget. "If applications don't work or won't support Year 2000, we have to get rid of them and find something else," he says.

"We are running into a lot of clients who are concerned with the amount of resources Year 2000 preparation is soaking up," says Gerry Cunningham, a partner at Deloitte Consulting in New York. Some of his clients may be forced to

put off implementing next-generation technology because of Year 2000-related allocations, he says.

That's already happening at Arizona State University (ASU). Year 2000 expenses prevented a Gigabit Ethernet rollout from getting full funding, says Darel Eschbach, director of telecommunications services for ASU in Tempe. Eschbach says other projects have been put on hold.

ASU has already implemented Year 2000 fixes and is spending a lot of time testing them, Eschbach says. One project involves "aging data through 12 to 19 months of the new millennium to be sure we get past the first cycle of systems running in the new age," he says. "This is very labor and machine resource intensive, since it essentially requires operating dual systems," Eschbach adds. Testing how the new systems will interact with systems outside the school is also a major headache.

Some firms have simply thrown up their hands on Year 2000 work, at least temporarily. Two IT professionals reported having to put off major Year 2000-related expenditures: one because of "insufficient information" from a vendor; another because "more important projects had priority."

— Elisabeth Horwitt



have the job slots available. A similar budgetary approval problem confronts Miles Britten, network administrator at White River Medical Center in Batesville, Ark. Britten asked for money to hire a technician to troubleshoot problems with the firm's AIX, NT and IBM

AS/400 systems, and applications such as billing and managed care.

Britten says he may have trouble getting final budget approval because management likes support to come from staffers in the departments where the systems reside. That plan would

obviate the need for additional funding, but Britten says that problems would still fall back on his department.

On the other hand, Britten doesn't expect to have trouble putting through a budget line item for Microsoft's Zero Administration for Windows software to

manage Windows 95 and NT clients.

"That's only \$4,000 for 200 seats," he says.

Several respondents interviewed are rolling out systems and desktop management software to minimize the need to hire new, expensive and scarce technicians. "We use network management tools instead of more people," ASU's Eschbach says. Survey numbers bear this out: 10% of respondents listed net-

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### Survey methodology

The 1998 Network World/Deloitte Consulting Budget Survey was based on telephone interviews with 200 *Network World* readers conducted by Focus Data in Framingham, Mass. Respondents were pulled from a random list of readers whose companies' revenue are at least \$100 million per year. Surveys were conducted only with subjects who indicated they are responsible for specifying or approving expenditures in network equipment, software and services.

work management products and services as receiving the most significant budget increases this year.

"Users are turning to enterprise systems management platforms from Tivoli, BMC and Computer Associates to handle the whole end-to-end process of managing networks, servers and applications," Deloitte's Cunningham says. "Of course, there is still a lot of wrestling with management over the business case for that."

And enterprise systems management is still complex and difficult to implement. Consultant Rivera's client, for example, has implemented Cabletron's Spectrum, but like many companies, the client neglected to plan the project. In particular, the company didn't figure out what specific business benefits it wanted to target. "As a result, Spectrum is providing very little benefit," says Rivera. "It's generated some reports, but those reports haven't been too useful."

The tendency to make business-focused budget decisions will only get stronger in the next few years, Cunningham says, as companies increasingly focus on managing network investments globally rather than piecemeal across business units.

The likely result, Cunningham says, is that strong business justification will become even more crucial in the years to come — particularly for technology such as ATM switching or systems management frameworks that adds to rather than replaces what exists today.

Horwitt is a freelance writer and consultant in Waban, Mass. She can be reached at [EHorwitt@compuserve.com](mailto:EHorwitt@compuserve.com).



# REVIEW

UPGRADE YOUR NETWARE SERVER DRIVE IN ABOUT AN HOUR? SERVERMAGIC MAKES THE IMPROBABLE POSSIBLE.

## Magic for your NetWare partitions

By Dennis Williams, Network World Test Alliance

It may not be pretty, but it works like a charm.

PowerQuest's ServerMagic 1.0 is a disk-partitioning tool that lets you manipulate new and existing partitions on NetWare 3.x and 4.x servers. We used ServerMagic to help us upgrade a handful of NetWare servers and found it to be a valuable tool. With it, we replaced the 4G-byte Integrated Drive Electronics (IDE) drive in an IntranetWare server with a 9G-byte SCSI drive and had the server up and running in one hour. With results like that, we can forgive the product for its surprisingly lackluster interface.

ServerMagic allows you to move or copy a NetWare partition to another disk. You might want to do this if you're upgrading the capacity or performance of your disk drives or if your disk becomes troublesome. You can also move partitions around on the same disk, which will consolidate the free space on the disk.

You can also use ServerMagic to enlarge an existing NetWare partition. Enlarging a partition is helpful when upgrading to larger disk drives or consolidating volumes. However, ServerMagic can only enlarge the partition; it cannot shrink a partition. And after enlarging a partition, you still must use NetWare to enlarge the volume.

If you've ever spent the weekend upgrading the drives on a NetWare server, you know how time-consuming it can be. You can copy from one server or drive to another, but only with non-SYS: volumes. The alternatives are to use Novell's migration tools or your existing backup software. But these methods only allow you to move data from one volume to another. ServerMagic lets you do the same thing much more quickly, and ServerMagic is the only tool that enables you to resize the NetWare partition.

The ServerMagic interface takes you back about 10 years, to a time when most programs

were strictly character-based. We were surprised that it lacked even the C-Worthy interface common among NetWare server applications. But despite the antiquated interface, the technology behind the product is leading-edge.

ServerMagic runs as a NetWare Loadable Module and is installed using NetWare's INSTALL.NLM. We installed ServerMagic first on an IntranetWare server with a 4G-byte SYS: volume. Once we installed it, we downed the server and added a second 4G-byte drive. We were then able to duplicate all the partitions, DOS and NetWare, quickly and easily from the original disk to the new disk. It only took a few minutes to copy the 100M-byte DOS partition, but the 4G-byte NetWare partition took about 45 minutes on our Pentium II server.

Next, we added a 9G-byte SCSI drive to the same server and used it to upgrade from the 4G-byte drive. Again, it took only a few minutes to

copy the DOS partition and about 45 minutes to copy the NetWare partition. We then used ServerMagic to expand the NetWare partition to occupy the remaining space on the drive. Next, we had to load INSTALL.NLM from the DOS partition (because the volumes are dismounted during this process) and increase the volume size by adding the new volume segment to the existing SYS: volumes. We thought ServerMagic should give us the option to increase the volume

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 PowerQuest  
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[www.powerquest.com](http://www.powerquest.com)  
 \$495 for a single-server license

### PROS

- ▲ Copies partitions from drive to drive.
- ▲ Expands NetWare or DOS partitions.

### CONS

- ▼ Aged interface.

size automatically to fill the remaining free space.

ServerMagic works only with directly attached drives; you can't copy partitions across a network.

If you're familiar with NetWare partitions and volumes, this product is so intuitive, you won't need the documentation. However, the documentation lacks the detail newcomers may need to use the product with confidence. Of course, make sure you have a reliable backup when you

## Score Card

	Server support (20%)	Drive support (20%)	Partition support (20%)	Ease of use (20%)	Installation (10%)	Documentation (10%)	Total score
<b>ServerMagic 1.0</b>	8 x .20 = 1.60	10 x .20 = 2.00	10 x .20 = 2.0	8 x .20 = 1.60	10 x .10 = 1.00	6 x .10 = 0.6	<b>8.8</b>

Individual category scores are based on a scale of 1 to 10. Percentages are the weight given each category in determining the total score.

modify partitions and volumes.

PowerQuest also offers PartitionMagic, which provides the same functionality for Windows 95, 98 and NT servers. A future release will bundle ServerMagic with PartitionMagic.

Despite its few shortcomings, ServerMagic is a worthwhile tool for any NetWare administrator's toolbox.

Williams is a freelance writer and network consultant in Alpine, Utah. He can be reached at [Dennis@ProductReviews.com](mailto:Dennis@ProductReviews.com).

Williams also is a member of the Network World Test Alliance, a cooperative of the premier reviewers in the network industry. For more Test Alliance information, including what it takes to become a member, go to [www.nwfusion.com/alliance](http://www.nwfusion.com/alliance).





## Handheld handyman

3Com's PalmPilot is more than a status symbol — with add-on hardware and software, it's a complete mobile office.

If you haven't tried a PalmPilot since it first came out, you'll be pleased to see that current models can act as e-mail clients. Of course, the first thing

you need to check mail from a remote site is a modem. Luckily, 3Com makes the dandy PalmPilot Modem, which fits into the bottom of PalmPilot, and looks as if it were born there. Like PalmPilot itself, it runs on two AAA batteries. The modem's top speed is

only 14.4K bit/sec, but because I don't expect to use it heavily, I can live with the slow speed.

3Com provides a facility for reading mail with Palm Desktop, but it only works with certain desktop clients, notably those that support Simple MAPI or VIM. My favorite client doesn't support either of these, so I had no good options — until Smartcode Software sent me HandStamp Pro.

HandStamp lets you send and receive messages through Simple Mail Transfer Protocol and Post Office Protocol 3 servers. It can't connect through a remote access server that demands a password, but it did connect through my AT&T WorldNet account, and it supports eight other bundled services.

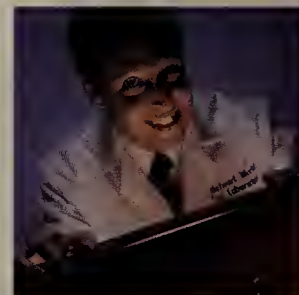
Sometimes you need tighter ties to your tasks than e-mail allows. For those occasions, you can install the

Synapse pager card from PageMart Wireless. The new card uses Motorola-developed technology to add paging and double the internal memory of PalmPilot to 2M bytes.

With the card in place, you can get not only numeric pages but also alphanumeric messages. Unfortunately, carriage returns aren't properly supported in alphanumeric messages, so message headers and other lists run together in a single paragraph.

I've run out of space to do more than mention AvantGo's WebClient browser for the PalmPilot. It along with all these tools make the PalmPilot a viable replacement for a notebook computer for frequent travelers. It won't let you create presentations, and you wouldn't want to use it to write the Great American Novel, but it offers enough value to justify its cost.

The PalmPilot platform has an active developer community. See Network World Fusion ([www.nwfusion.com](http://www.nwfusion.com)) for links to a few sites where you can download dozens of commercial and shareware applications for your PalmPilot. ■



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by Test Center Director

**Lee Schlesinger**

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# Management Strategies

## Campus convenience

*Distance learning reduces scheduling conflicts and eliminates commuting woes for IT professionals.*

**H**aseeb Akhtar used to travel two hours each way to get to class at Southern Methodist University (SMU) in Dallas, where he's working toward a master of science in telecommunications. Today, he walks five minutes from his office to a conference room to attend class with four co-workers. Akhtar, who manages network technology development for Nortel in Richardson, Texas, found relief from his tiresome commute in distance learning.

"It's much less pressure and a very efficient way of managing time, especially since I can take classes during the day," Akhtar says. "The only thing I have to worry about is getting my manager to approve the time."

SMU broadcasts the lectures over The Association for Graduate Education and Research (TAGER) television network to Nortel and dozens of other corporate sites in northern Texas. Remote students such as Akhtar watch the lectures and participate via telephone.

Distance learning, a growing trend in continuing education, allows motivated students to take classes without leaving their homes or offices — courtesy of the Internet, satellite television broadcasts and express delivery.

It's a \$6 billion per year industry, according to Alan Minard, director of academic markets for Lotus in Cambridge, Mass. Lotus manufactures Lotus LearningSpace, a collaborative training application used by schools such as Drexel University and New York University.

"I think the Internet has made access so ubiquitous that you could take classes anytime," Minard says. "Folks are using their spare time to increase their knowledge and ability and stay current with technology as it rockets ahead of all of us."

Distance learning also eliminates geographic boundaries, making it easier for you to find a challenging program that meets your needs.

For example, Phil Freyer manages global network architecture for Bechton Dickinson, a manufacturer of medical supplies and devices in Franklin Lakes, N.J. In his spare time, Freyer is working toward a master's degree in technology management from the University of Phoenix in Arizona. Instead of traveling 2,400 miles to attend class, Freyer dials in to the online program at night from home and in the early morning from his office.

*By Lynne Jackson*

"It's kind of like a chat room," Freyer says. "All of the classes and lectures are downloaded there. Then you fulfill the assignments and upload them to classmates and the teacher. Everybody reads each other's assignments and participates in online discussions."



**Phil Freyer** is pursuing a master's degree in technology management at a school located more than 2,400 miles from his New Jersey home.

Though convenient, the online program isn't easier than traditional on-site classroom education. In fact, Freyer claims it's more difficult. "Participation is required, so students have to get online everyday. It's a bit tougher than raising your hand in class," he says.

Freyer believes his hard work will pave the way for greater career opportunities as it increases his managerial capabilities and IT knowledge. "Everyone is starting to recognize that you need credentials in this field, especially if you want to manage and lead," Freyer says. "This degree takes into account all the different areas of information technology and how to manage them from the legal aspects to finance to storage systems to research and development."

At SMU, the TAGER television network lets remote in-state students tune in to lectures, and a courier service delivers their books, assignments and exams. For out-of-state students, SMU ships videos and posts assignments

on the World Wide Web. The university also plans to deploy Internet streaming video technology so students can download lectures anytime via a Web browser.

"The classroom looks more like a TV studio than a traditional college classroom," says Michael Kirkpatrick, director of graduate education and marketing at SMU.

There, off-site students receive the same classroom instruction as on-campus pupils, but they have the opportunity to view lectures repeatedly, which often yields them better grades than their on-campus counterparts. Students who receive the tapes from a courier experience a 10-day delay on average and turn in their assignments and exams accordingly.

Per-credit tuition is comparable for on-site and off-campus graduate students at both the University of Phoenix and SMU. At Phoenix, off-site students pay an additional \$100 for software. At SMU, they pay 10% more per course to cover videotaping and courier services, but they avoid the activity fees on-campus students pay.

At Phoenix, off-site students take one course at a time and have six weeks to complete it. They can take consecutive classes for two years or space them out over roughly four years, which Freyer chose to do. He says that he could have finished sooner, but he opted to periodically take time off to spend with his family.

Balancing work, school and family remains Akhtar's and Freyer's biggest challenge, but it hasn't deterred either from continuing their studies.

In fact, both plan to pursue other degrees after completing their current programs to keep pace with the demands of the IT world. "I don't think education ever really stops," Freyer says.

The key ingredient is motivation. Distance learning can be a long, lonely journey. Students must concentrate on their academic requirements with minimal accountability and peer support. But they can find comfort in learning at their own pace and in their own space.

*Jackson is a freelance writer in Collingswood, N.J. She can be reached at [lynnejackson@erols.com](mailto:lynnejackson@erols.com).*

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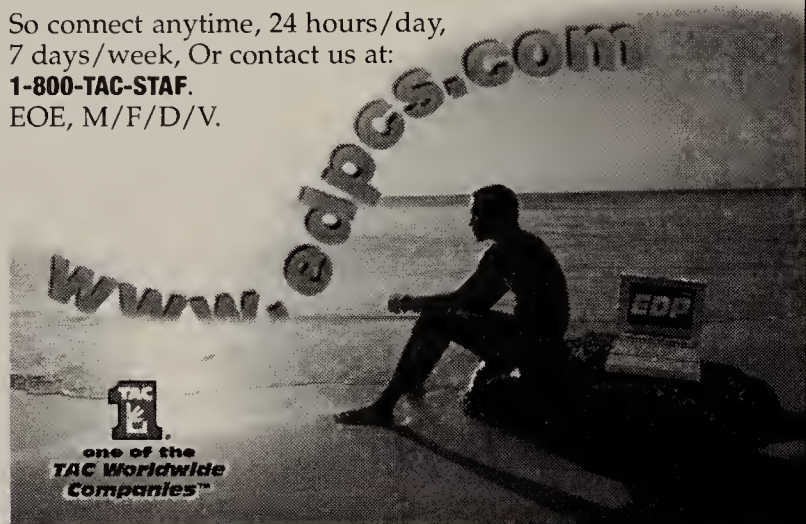
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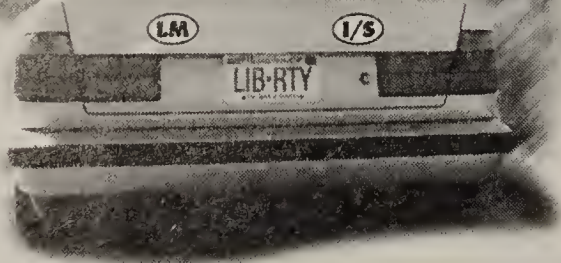


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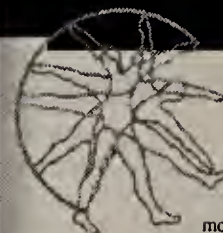
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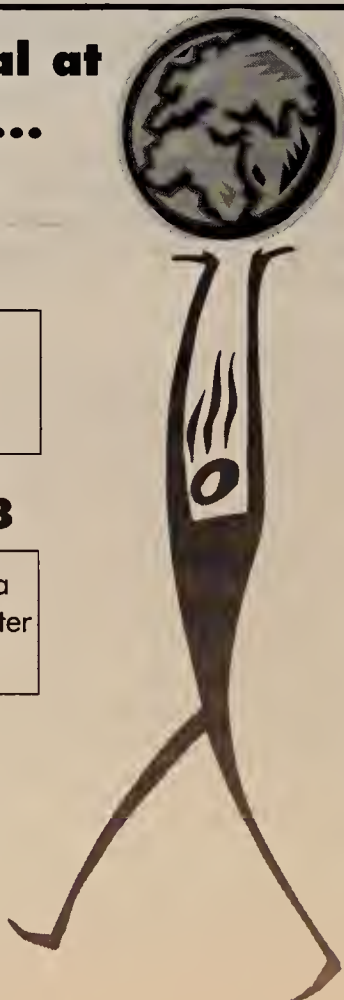
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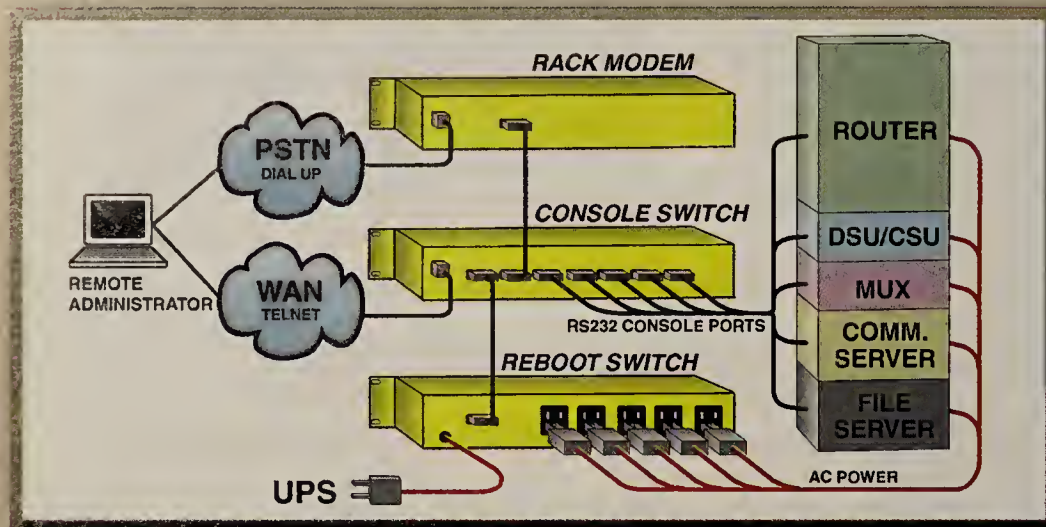
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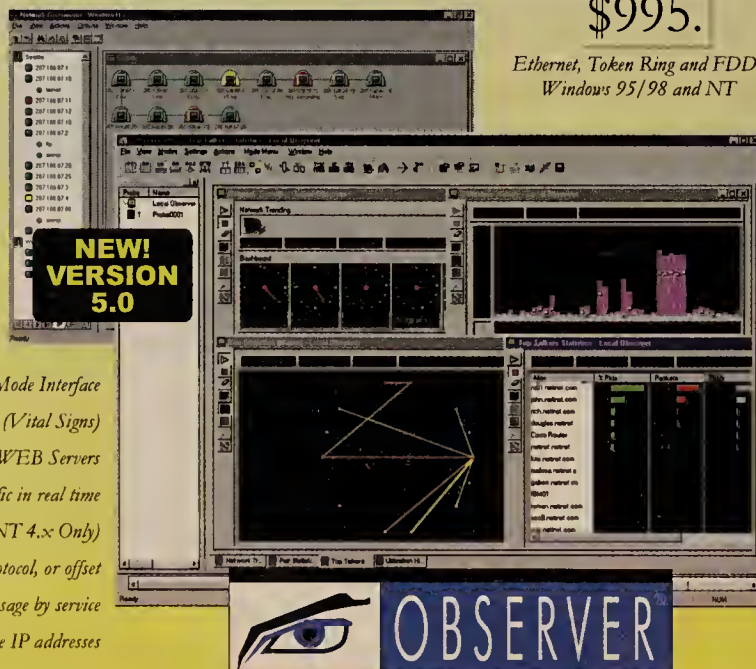
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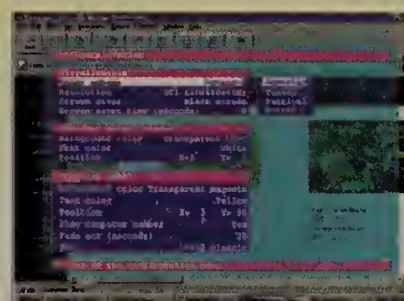
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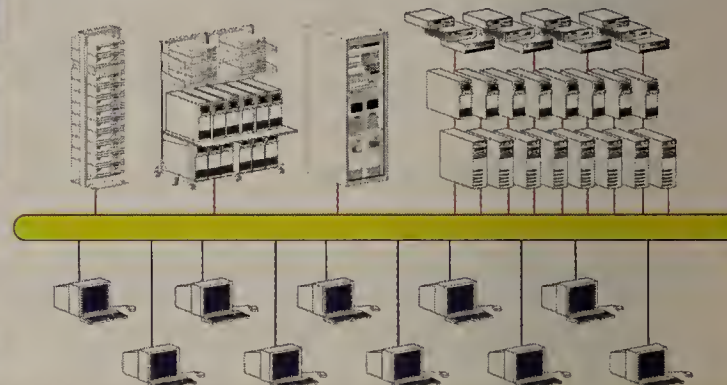
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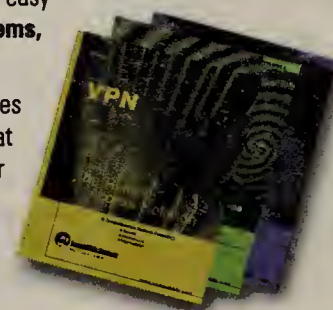
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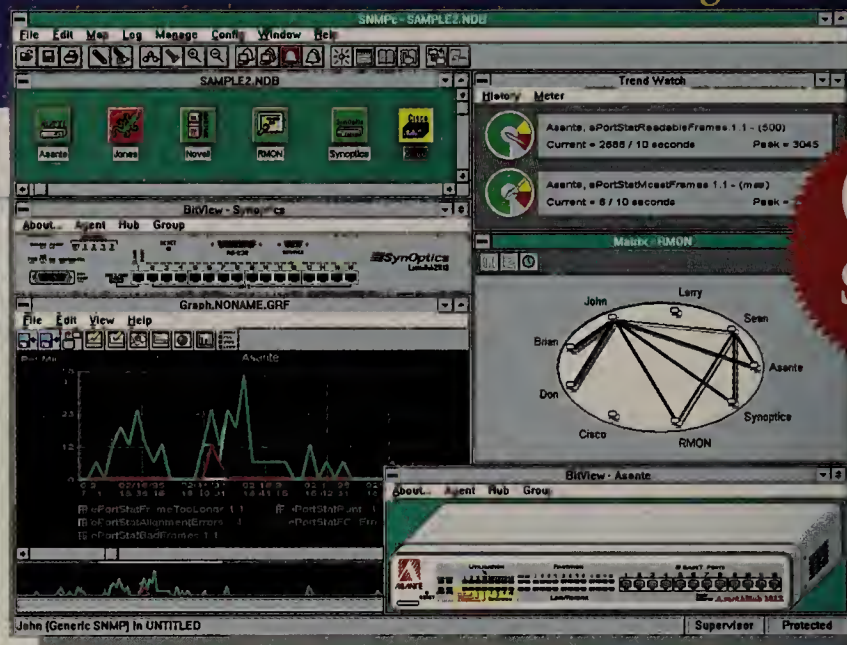
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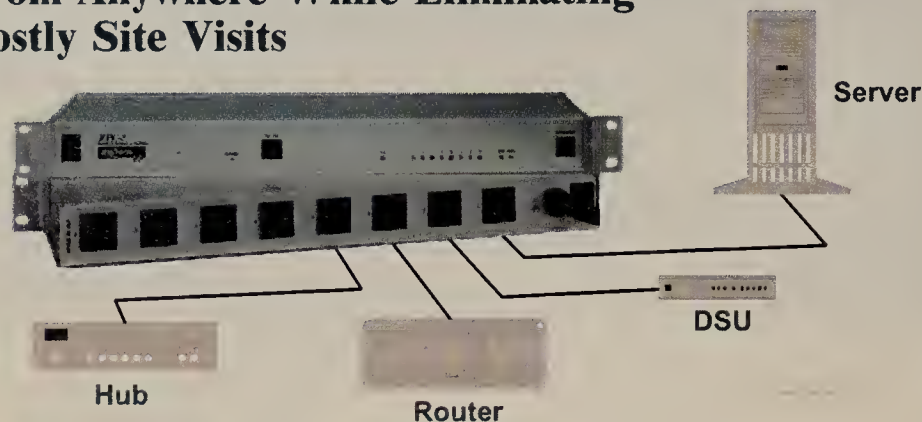
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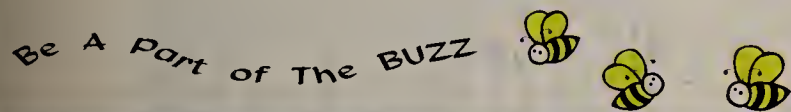
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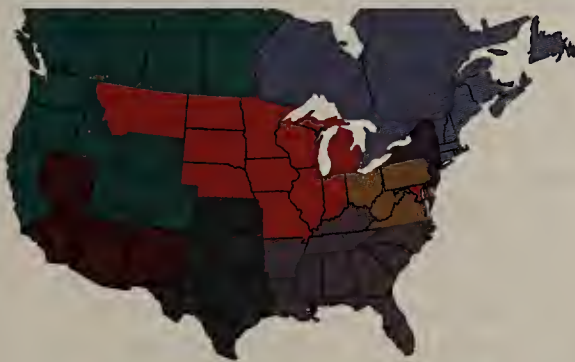
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3Com	40
<b>A</b>	
America Online	19
Attachmate	17
AvantGo	40
Axent Technologies	23
<b>B</b>	
Bay	15
<b>C</b>	
Cabletron	1
Cisco	1,17
Computer Associates	1
CyberGuard	23
<b>G</b>	
GedNet Communications	19
<b>H</b>	
Hewlett-Packard	1,15
Hitachi Internetworking	15
<b>I</b>	
IBM	17
<b>L</b>	
Learningstation.cdm	10,15
Legato Systems	15
Level 3 Communications	19
Lotus	23
<b>M</b>	
Microsoft	6,16,23,56

<b>N</b>	
Novell	16
<b>O</b>	
Oracle	10,23
<b>P</b>	
PageMart Wireless	40
PageNet	19
PowerQuest	39
<b>R</b>	
Rubric	56
<b>S</b>	
SAP AG	6
Shiva	8
Smartcode Software	40
Sprint	19
Stampmaster	6
<b>T</b>	
Tivoli	1,17
<b>V</b>	
Vericon	15
Versatility	23

#### ADVERTISER INDEX

Advertiser	Reader Service	Page#	URL
3Com	21		www.3com.com
AbirNet	305	48	www.abirnet.com
ACI International	245	48	www.aciconnect.com
ADC Kentrox	94	7	www.kentrox.com
Adtran	92	11	www.adtran.com
Am Tech Labs Inc	302	46	www.atli.com
Ascom Timeplex	239	50	www.timeplex.com
*Attachmate Corp	95	28	www.attachmate.com
Bay Tech	262	50	www.baytechdcd.com
Castle Rock Computing	300 252	45, 50	www.castlerock.com
Compatible Systems Corp	238	49	www.compatible.com
Crosstec Corp	93	13	www.crosstec.com
Cyber Computer	227	47	www.cyber.com
Dataprobe Inc	285	48	www.dataprobe.com
Dell Computer Corp	2-3		www.dell.com
Hemisphere Information	18		www.criticalcomputing.com
Hewlett Packard	9		www.hp.com
IBM	1, 58		www.ibm.com
*Kingston Technology	96	34	www.kingston.com
Managing Enterprise Networks	38		www.dci.com
Meckler Media Corp	40		events.internet.com
Micom Communications	243	50	www.micom.com
Network Instruments	290	46	www.networkinstruments.com
Precision Guesswork	254	49	www.guesswork.com
Pulizzi Engineering	261	49	www.pulizzi.com
Rose Electronics	289	47	www.rosei.com
Sprint	4		www.sprint.com
Tron International	233	48	www.tron.com
West Hills LAN Systems	297	45	www.west-hills.com
Western Telematic Inc	250	46	www.wti.com
Xylan Corp	97	57	www.xylan.com
ZD Comdex & Forum	25		www.interop.com

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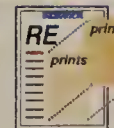
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AT&amp;T

Continued from page 1

Data Sales Agent Program, AT&T is recruiting local VARs that sell a significant amount of WAN equipment. Once accepted into the program, they are authorized to sell AT&T frame relay and private line services for a commission.

Under the AT&T Alliance Program, the company is recruiting integrators that specialize in helping users build IP intranets. Those companies become agents selling term contracts for WorldNet MIS and VPNS.

Ironically, AT&T traditionally has not only operated using a direct sales force but also has been actively hostile to resale of its services via other channels. AT&T frequently has battled in court with telecom resellers that buy AT&T services in bulk, mark them up and sell them to small businesses and consumers.

But AT&T officials emphasized their new program is aimed at a different class of reseller — network integrators experienced in installing LANs and desktops as well as routers and switches. And they are upfront about why they're taking this approach — because the company's CEO is demanding more revenue.

"Mike Armstrong's mantra is top-line selling growth," says AT&T's Director of Global Channel Management Keith Olsen. Not only is AT&T looking for more sales outlets, but the company also wants to find VARs to take over the installation chores once the sale is made. "Anything we can do to increase the amount of selling time of our direct sales force is good," Olsen says.

The move is applauded by many in the industry who say traditional carriers still lack the full range of data expertise and contacts they need to meet their potential.

"There are certain user organizations that are more inclined to buy from those channels," says one AT&T partner who asked not to be identified. "Now the telecom industry is trying to build off the model in the computer industry."

Case in point: SportRack Automotive, a supplier of vehicle luggage racks and other automotive supplies in Royal Oak, Mich., has an

AT&T frame relay network it purchased through AT&T sales agent Ideal Technology Solutions U.S. SportRack is now converting to WorldNet VPNS from an earlier AT&T intranet offering with Ideal Technology's help.

"I'm on the phone with

where the AT&T people were not as expert on the data side as they were on the voice side," says Larry Lane, vice president at Atlanta Datacom, a Norcross, Ga., integrator that belongs to both the Data Sales Agent and Alliance programs.



Keith Olsen, director, global channel management, AT&T

these people all the time. They know my operation — they're right down the street from me," says SportRack MIS Manager Bill Olzak.

In addition, Olzak doesn't face the dilemma of shelling out more money to purchase one of AT&T's managed-network options and then worrying about integrating it with LAN and desktop support. He purchases his WAN maintenance services from Ideal Technology instead of AT&T.

"It's included in my monthly bill for the rest of the network support," Olzak says. "Our plan was to keep things as lean as possible, and now I have one support agreement for my LANs, WAN and hardware."

#### The Novell evolution

AT&T's VAR programs did not just appear out of thin air. Of the Alliance Program's 375 members, many are Novell Gold and Platinum VARs that AT&T originally contacted when it was seeking help selling its now-defunct NetWare Connect Service.

Those relationships continued when NetWare Connect evolved into the AT&T WorldNet Intranet Connect Service supporting both IP and Novell IPX traffic, the forerunner of today's AT&T WorldNet VPNS service.

But according to VARs, the reseller-recruitment effort has taken off this year as AT&T realized that even its frame relay, private line and straight Internet access could benefit from outside help.

"AT&T from the direct sales force does not have the expertise on the inside of the wall," says Bob Skinner, vice president of Ideal Technology.

"There were some areas

Besides, Lane adds, "It's an extremely low cost of marketing for them."

Another factor forcing AT&T to seek indirect sales: Armstrong's drive to reduce employees as he whittles away at AT&T's gargantuan overhead. "A significant number of direct sales people were affected by [this year's] early retirement program," Lane says.

What's more, AT&T has its eye on the pending entry of regional Bell operating companies into the long-distance market. Most of the RBOCs have long operated via sales agents because their direct sales forces cannot possibly cover their entire territories.

"AT&T is in a catch-up mode," says Manny Quevedo, vice president of marketing for the communications group at Inacom, a large distribution house based in Omaha, Neb. "They were concerned with losing pace with the RBOCs, and considering where the RBOCs may end up, they had to act."

#### Sharing the wealth

But AT&T is not just counting on VARs to replace lost opportunities. One of the most unusual aspects of the programs is that AT&T not only is asking VARs to generate leads, but it's also giving some of its own direct sales leads to the VARs.

ADCom's Lane says AT&T is offering a dual-compensation system under which the AT&T salesperson and the VAR receive commissions for a sale if they both had a hand in it. Although neither AT&T nor the VARs would disclose the exact compensation percentages, AT&T's Alliance Web site promises the potential of \$20,000 to \$35,000 worth of commissions for a three-year

WorldNet MIS contract and \$30,000 to \$40,000 for a WorldNet VPNS contract.

The integration of the direct and indirect sales forces goes beyond that. "We sit on all their national advisory councils for frame relay and IP services," says Ideal Technology's Skinner. And support for the two agent programs is due to be consolidated next month at a special agent-support center in Kansas City, Mo.

But the agents do not get completely free rein. For example, most of the pricing work is tightly controlled by AT&T. Agents send prospective WAN designs to data-network account executives in Kansas City, who come back with a proposed price after asking some questions.

"Upfront they'll say, 'Who's the competition?' If there's no competition, we start off with the best available tariff," Lane says. "But if there is competition, they massage it and come back with new pricing."

Other agents insisted that users should not fear that price negotiations are out of their hands. "We have the ability to go get the negotiated special pricing here," Skinner says. "[AT&T's] been very good coming back to us with aggressive pricing when we need it." He adds: "You're not going to be able to play the direct sales force off of us."

Still, some users with long-time relationships with the AT&T direct sales force are

about the pricing. "The problem with all these long-distance companies is they want to tell you what to quote, and that's not acceptable to us," said one WAN-oriented network integrator who asked not to be identified.

After-sales service and support is a crucial issue, too. "I don't want to lose my network and not be able to talk directly to the vendor that's responsible," Miller says.

#### Certifying the deal

As an alternative for large users seeking managed contracts that go beyond the WAN side of the router and don't require dealing with indirect channels, AT&T Solutions later this year is expected to introduce a standard LAN-management offering (NW, April 6, page 1). And AT&T said that customers of sales agents will still be able to deal with AT&T for routine service matters.

But the need for service and support opens up opportunities for VARs that offer their own network-management programs, says Mark Nighbor, general manager of the data-agent program. Instead of selling AT&T's own Managed Network Solutions, VARs can roll their own remote-management offerings into the sale.

For that reason, AT&T is even considering a certification program similar to those offered by Microsoft and Novell, though on a much more selective basis.

Currently, the company offers a two-day training program, code-named Base Camp, that tours the country, hitting spots twice a month for two days at a time.

Analysts say such certifications could help boost VARs in the eyes of users who are weary of split responsibility for their managed LANs and WANs.

"All these network integrators appear to have an incredible number of LAN certifications, but when it comes to wide-area networks, it becomes extremely fuzzy," says Kitty Weldon, a senior analyst at The Yankee Group in Boston. "So customers rightly ask, 'How can you really be a one-stop shop?'" ■

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- Overviews of AT&T's WorldNet offerings.
- A look at the support issues facing Nortel.

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## Management

Continued from page 1

goals, says Ray Paquet, research director at Gartner Group.

The reasons for failure? Paquet says there are many:

- The tools don't work out of the box.
- The packages are expensive, so return on investment is hard to achieve.
- The packages are highly customizable and therefore extremely difficult to implement.
- User expectations are too high.

Executive surveys have consistently shown that systems and network management has been among the top five concerns for the past four to five years, Paquet says, adding that there hasn't been a corresponding increase in planning and budgeting for the appropriate tools.

While executives can be convinced to pay top dollar for management software, they're not usually as accommodating when it comes to funding the planning and implementation stages.

"You've got to look at this as a life cycle," Paquet advises. While vendors are great at explaining all the nifty things the software can do, they're not always as clear about what it can't do.

"Don't assume that you can do a whole lot right out of the box other than using SNMP to poll the network and maybe draw a picture," says David Passmore, president of NetReference, a Herndon, Va., consulting firm.

The problem with packages such as HP OpenView is they take a substantial amount of work to implement, says Peter Pawlak, manager of distributed

computing at Alaska Airlines in Seattle. Alaska Airlines bought OpenView more than two years ago. "OpenView got installed, it discovered the nodes on the network, and that was the extent of it," he says. "The amount of work it took to go through and really identify and customize the thresholds, limits and items that you really wanted it to respond to is something that no one had the time for."

He estimates his company uses about 10% of OpenView's capabilities, but he is planning to use more of the package's features in the next few months.

At least one other user has had similar problems with the OpenView package.

"The biggest problem with OpenView is it tries to be everything to everyone, and it ends up being little to anybody," says one network manager who declined to be identified.

His problems with OpenView started right away. "Installation? Boy, you really have to have your coffee that day," he says. His firm initially spent about \$50,000 for OpenView, which is not really a lot in this market. Then for three months the company paid a consultant who eventually decided there was something wrong with the company's switches. Finally, the network manager went to OpenView class for a week and was able to fix the problem "in 15 minutes," he says.

After he fired the consultant, the network manager turned to Ipswich Software's WhatsUpGold, a \$795 network management package that doesn't have near the functionality of OpenView — some-

thing he sees as a good thing. You can't run policy-based management, quality of service and other sophisticated management tasks with WhatsUp Gold, but you don't pay



Media News Technologies' Hamilton has put a lot of time and effort into his Unicenter operation.

\$50,000 for it either, he says.

Derek Weeks, senior business developer for the OpenView Business Unit, says he always tells customers the software cost is just a beginning. "I make it very clear to the customers that this is what they have to look at in terms of costs of implementing a solution," he says.

### Enter the experts

Experts say this is where the burgeoning professional services industry comes in. For a hefty fee, independent consultants, or those belonging to a vendor's professional services division, will come to a company and get the management software to do what it's supposed to.

In fact, Computer Associates estimates customers pay between \$7 and \$10 in professional services to support the package for every \$1 they pay for Unicenter TNG, says Chris Wagner, executive vice president of CA Global Professional Services.

Even worse, management software companies are now reaping huge profits from the professional services business, says Judith Hurwitz, president of The Hurwitz Group, a Framingham, Mass., consultancy. Hurwitz sees it as a rip-off.

"The growth in the professional services industry is indicative of a collective failure in the software industry," she says.

For every dollar in software costs, companies spend at least

\$3 to \$5 on services, Hurwitz estimates. Users "should not be putting up with that; it's not acceptable," she says.

Gartner Group's Paquet says Hurwitz's estimate is conservative.

The purchase price is, in a best-case scenario, 20% of the total cost of ownership, and 5% in the worst case, Paquet says. "For every \$1 million customers spend on software, be prepared to spend \$10 million more in support costs, not including the cost of the organization and operations," he says.

For Kevin Hamilton, chief information officer at Media News Technologies, a newspaper group in Denver, Computer Associates' Unicenter TNG worked out just fine. Hamilton says it took him five days to get it installed and configured.

"They sent out one of their engineers to do it, and there was nothing to do because it was done," he says.

In part, Hamilton attributes his easy installation to the four months he spent drawing up schematics to plan for it.

But what about network managers who simply don't have the time? "You have to make the time," he emphasizes, "even if it means coming in on the weekends or working at three or four in the morning." You're not going to see a return on investment if you don't put in the time upfront, he says.

But Hamilton is not your typical net management user. He has become such a whiz at Unicenter TNG that he's struck a deal with Computer Associates to write the Unicenter agents for Microsoft Site Server.

Richard Weiss, architect for enterprise management systems at Charles Schwab & Co. in San Francisco, uses HP OpenView for network management and Tivoli TME for systems management.

While he says he's gotten a good return on investment from both products, Weiss estimates it took about three years to get each running up to

speed "We didn't think it was going to require as much upfront and ongoing work," he says.

### You don't get what you pay for

Rich Ptak, director of systems management research at D.H. Brown Associates in Amherst, N.H., estimates about 30% of net management implementations are fully utilized. Even when people use the net management software, very often they use it to monitor their networks, not to manage their networks.

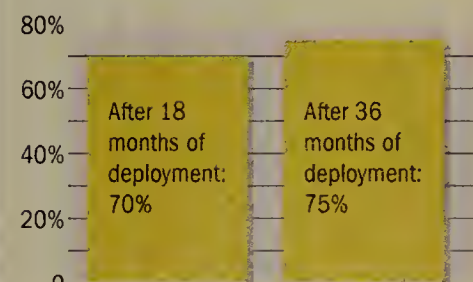
"Things have got to be made simpler, yet at the same time it's got to be something that gives you capabilities right out of the box," Ptak says.

That's not easy. "The message is, if you're going to buy one of these packages, be prepared to spend a lot of time with it," NetReference's Passmore says.

Gartner Group's Paquet likens implementing a successful management system to baking a cake. "If you wanted to bake the best cake in the world, I'd hire the best chef," he says. The same is true when choosing a management platform. Realistic, long-term planning with the right people "is much more important than whether they use OpenView or Unicenter or Spectrum," he says.

## Management bust

According to a Gartner Group study, the majority of enterprise management installations fail. (Failure is defined as the inability to achieve expectations or return on investment goals.)



SOURCE: GARTNER GROUP, STAMFORD, CONN.

Media News' Hamilton says he spent at least \$100,000 on Unicenter TNG and calls making that kind of decision "terrifying, because you're convincing your chief financial officer that this is going to do what it says it does."

"You're selling them a dream, and you're hoping that it becomes a reality," he says. ■

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## Shakedown spam and antispam spam



Well, I tried to get away from the whole issue of unsolicited e-mail, also known as spam, but it seems to be turning into the column topic that won't die.

The reason I can't let spam drop is it seems to be a hot topic. Feedback about the past two columns has been enormous, and we can blame faithful reader Matt Steinhoff for giving me yet another new type of spam to consider: shakedown spam.

Matt received a message from GSI Research — which has no discernable presence on the World

Wide Web that I could find — about spam. The GSI dispatch starts with the salutation, "Dear friend," which is never a good sign, and continues: "Our research indicates you may have been a victim of unsolicited commercial e-mail (UCE), or so-called 'Internet spam.'"

The pitch goes on to say: "We at GSI Research are fighting to keep Internet bandwidth free of UCE in order to conserve resources. . . . The services we provide to the Internet community include identifying, tracking down and demanding accountability from spammers, and discouraging them by all legal means. . . . As you can imagine, the technology and vigilance required to combat the spammers is expensive. To reiterate, we need your help. Your contribution of \$9.99 would assist us greatly in combating the UCE received by thousands of e-mail accounts daily."

I nearly fell out of my chair when I read this. And to make the pitch even more outrageous, GSI suggests you pony up your contribution by sending in your credit card details! Antispam spam with a twist. This is the first time I have seen a shakedown via e-mail.

Matt says he has contacted HotMail via e-mail three times to report the spam, but all he's received so far are autoreplies. Would anyone from HotMail care to comment?

As if this gem wasn't enough humor

for one night, in came a message from my old friend Jim Sterne with another example of antispam spam.

This spammer's literacy is sketchy. He starts off with the subject "Important Notice Form ISP" (I suspect he meant "from"). He goes on: "Our ISP is working 24 hours a day to

stop Spammers. By the year 2000 all Spammers will be VANISH! Thank to all members who cares about having a peaceful internet service! Help us clean out the internet services and kick out all Spammers!"

The author, who signs himself "Director ISP, Dan Kirbit," helpfully continues: "Below are some services that we

recommand.to be helpful!" The first service Dan Kirbit recommends is [www.cvpinc.com](http://www.cvpinc.com). The supplied link brings you to a cheesy Web site that claims to be "Your Doorway to the hearts and minds of over 300,000 viewers." This site, administered by one Jose Castro out of New York, has some lame offer to get your Web site on Web TV. Mr. Castro's writing is curiously like that of "Dan Kirbit."

Our friend Dan Kirbit goes on to recommend a site, [www.globalads.com](http://www.globalads.com), as a way of making "96.6% of all porn sites" vanish. If you follow the link, you'll find a very ticked-off company that claims vehemently to have nothing to do with the antispam spam.

These are examples of real spam, the kind of snake-oil selling that gets people so riled. I've been thinking some more about how spam can be controlled, and I have another suggestion. If all ISPs add a routing and identification header to each message, tracking back to find the miscreant would be a lot easier.

So a couple of things: 1. What's wrong with this solution? 2. What fabulous examples of spam have you received? Next week: something completely different (unless, of course, spam stays really interesting).

Snake oil to [nwcolumn@gibbs.com](mailto:nwcolumn@gibbs.com) or (800) 622-1108, Ext. 7504.



Mark Gibbs



**SPAMMING BEGINS AT HOME** There are many indignities to be suffered in cyberspace: Finding your name falsely posted in the guest book of an "I Love Urkel" Web site; being scorched in a newsgroup flame war by someone named "Lo0zEr"; getting fired from your gig as Webmaster of an "I Love Urkel" site...again.

Others, no doubt, have their own horror stories.

To this list, you can add "being spammed by your own spouse." It happened to me last Wednesday when my wife e-mailed me the most recent version of a hoax message using the names of **Bill Gates** and the **Disney** empire.

The message, purportedly written by Walt Disney Jr., explains that Disney is helping Microsoft test an e-mail tracing program. Uncle Walt the Second then urges recipients to forward the e-mail to as many people as possible.

"If it reaches 13,000 people, 1,300 of the people on the list will receive \$5,000, and the rest will receive a free trip for two to Disney for one week during the summer of 1999 at our expense," he promises.

Of course, there is no such promotion. A **Microsoft** spokesman says the hoax e-mail is a variation of a bogus message that first made the rounds last November in which "your friend, Bill Gates" promised \$1,000 to anyone who would forward his message to 1,000 others. (All you had to do was e-mail him your credit card number and expiration date, then you'd receive a follow-up message saying "Bill" would deposit the \$1,000 in your account!)

But the proliferation last week of the Gates/Disney hoax e-mail is a fascinating example of how — and how well — spam works. (By the way, there is no Walt Disney Jr.)

My wife received this e-mail from her sister-in-law in Prague on Wednesday morning. She immediately sent it off to me and about eight other people. Who knows what happened after that.

Within the hour, a *Network World* colleague who (irony alert) writes about spam got the same e-mail message from his wife, through a whole different chain of people. Later a public relations contact on the West Coast told me she and a friend received the hoax letter several times.

Spam is no harmless prank. It's unsolicited trash that clogs up cyberspace. Employees at one Boston-area publishing company say the Gates/Disney spam bounced around their network so much last Wednesday that it jammed their servers.

Still, that's just an IT issue. When marriage counselors start specializing in spam conflict resolution, then we'll have a real problem.

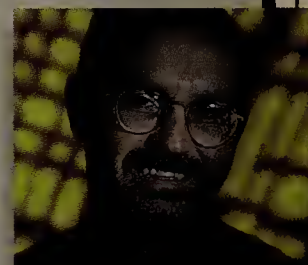
**RUBRIC RULES** Last spring 'Net Buzz profiled a start-up called **Rubric, Inc.**, which was then preparing to launch its debut software, a Web application for marketing professionals.

Rubric's product, Enterprise Marketing Automation, is designed to help marketers better target customers and accurately measure the dollar impact of their efforts.

The company is one of a number of well-funded Internet start-ups targeting niche markets that are attracting major interest from venture capitalists, many of whom have grown leery of business plans based on reaching a mass audience. (See story, page 23.)

Founded early last year, Rubric is quickly drawing a crowd. Its most recent investors are **TL Ventures**, **Amerindo Investment Advisors** and **RRE Investors**, which led an \$8.6 million second round of financing for the San Mateo, Calif., company. The trio was joined in Round 2 by original Rubric investors Menlo Ventures, Brentwood Venture Capital and Cambridge Capital Fund, which contributed \$5.1 million to the start-up last October.

For the record, 'Net Buzz has never contributed to the proliferation of any spam via newsgroup or e-mail. The oral tradition doesn't count. Send your best Internet- and intranet-related news to Chris Nerney at (508) 820-7451 or [cnerney@nww.com](mailto:cnerney@nww.com).



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Texas A&M is the nation's sixth largest university in terms of student enrollment and first in geographic size. With its main campus network in College Station, along with networks in sister institutions across the state, Texas A&M wanted to unify its network infrastructure. "What we needed was a technology that would allow us to upgrade our network incrementally, without having to wait until everything was switched over to receive the benefits," says Willis Marti, senior lecturer and director of computing services in the department of computer science at the University. "We found that the Xylan switches that were provided and supported by Anixter provide an incredible degree of flexibility in integrating and configuring both legacy networks and new technologies."

"We recently made a decision to push the switched Xylan solution all the way to the dorms," adds Dave Hess, director of networking at Texas A&M. "Each student will have his/her own switched port. This lets us deliver higher bandwidth, and provides a means for the University to achieve its security goals via the embedded Xylan authentication capabilities."

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